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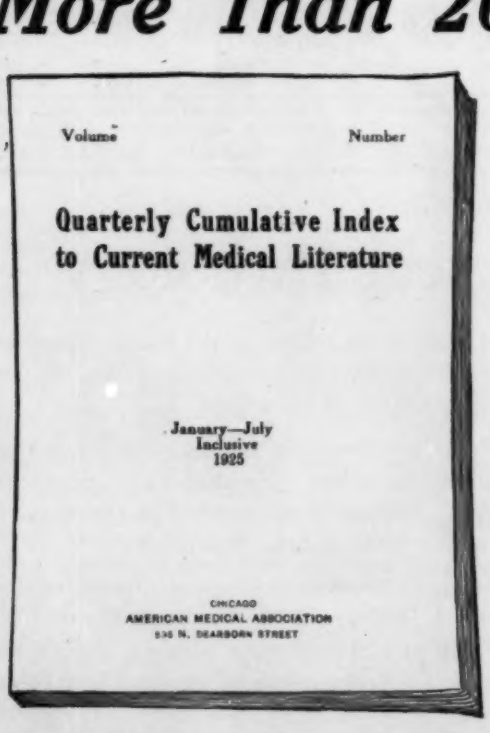


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# The Journal of the American Medical Association

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## EXTRA-ABDOMINAL CONDITIONS SIMULATING ACUTE ABDOMINAL DISEASES *


DAVID RIESMAN, M.D.
PHILADELPHIA


Surgeons have coined the linguistically objectionable phrase "acute abdomen" to express acute abdominal diseases requiring, as a rule, operative treatment. The abdomen, however, can be neither acute nor chronic any more than a leg or an arm can be acute or chronic.

The sudden onset of pain of severe character in the abdomen, together with signs and symptoms indicating an acute intra-abdominal lesion, imposes on the physician, since he is usually the first one to be called, the duty of making a correct diagnosis and of deciding whether the treatment shall or shall not be immediate operation.

Experience and experiment have taught us that, owing to the integrating action of the spinal cord centers, pain impulses coming from the periphery may be referred to areas of the body not in direct contact with the part from which the pain impulses primarily arise. Therefore, it happens that pain in the abdominal wall may have its real origin elsewhere, and that pain arising in the region of some abdominal viscus may by a like perversity manifest itself in another and remote part of the body.

These well attested facts impose on us the obligation of determining, when confronted with acute abdominal symptoms, whether the pain and tenderness are in reality of intra-abdominal origin, or whether they arise elsewhere. We must not assume that abdominal pain of necessity means abdominal disease.

Acute conditions within the abdomen are counterfeited most often perhaps by pneumonia, which may simulate the symptoms produced by appendicitis, gallstone colic, or perforation of an ulcer. To those who have never seen the perfect mimicry of appendicitis by pneumonia, the possibility even of such a thing is hard to conceive. Yet there are few large hospitals in which patients with pneumonia have not been operated on in the belief that the correct diagnosis was appendicitis. How frequent this error is can readily be seen from the report of Adams and Berger,[1] that twenty-five patients out of 145 suffering with lobar pneumonia were sent to Boston City Hospital with a diagnosis of appendicitis.

There is only one rule for avoiding mistakes, and that sometimes fails; namely, to make as thorough examination of the chest as of the abdomen in all cases presenting acute abdominal symptoms. The leukocyte count often gives no help; yet we should remember that more than 20,000 white cells per cubic millimeter is a rare finding in appendicitis, and is suggestive either of pneumonia or of a pus collection somewhere in the body. Rectal examination is of value in that it may in doubtful cases confirm the diagnosis of appendicitis.

An apparent gallstone colic of cholecystitis is sometimes only a masquerade, the disease being a central lobar pneumonia or perhaps a pleurisy. The following case is pertinent:

R. L. M., a man, aged 42, six weeks before coming under my observation was seized with a cold, chills and fever, and dull pain in the right upper part of the abdomen. He was in bed for about a week and then became jaundiced, and in addition had almost daily a severe outcrop of urticaria. The jaundice and the upper abdominal pain led his physician to diagnose inflammation of the gallbladder and biliary obstruction. When he came to my office he had a temperature of 99 F.; pulse, 120; systolic blood pressure, 100; diastolic, 85, and was slightly jaundiced. The urine contained bile. In the previous history there was nothing of moment except an attack of empyema thirty years before, for which he had had a rib resection. Physical examination showed, to our great surprise, and to the greater surprise of the family physician, that the right chest, the one that had been the seat of empyema before, contained pus almost up to the clavicle. The hepatic symptoms were apparently due to pressure on the liver and perhaps to a toxic hepatitis. So it happened that instead of having a gallbladder operation as he had been led to expect, the patient had another rib resection.

One of my surgical friends once asked me to see a patient with gallstone colic. The history was quite in accordance with the diagnosis. The patient, about 40 years of age, was jaundiced, his liver was enlarged, and the right upper quadrant was tender. The man, however, was sicker than the usual patient with a gallstone attack, and I was not surprised on examination to find that he had a pneumonic patch in the lower lobe of the right lung.

Even simple pleurisy may produce pain in the abdomen completely overshadowing, unless a thorough examination is made, the trouble in the thorax.

Another "acute abdomen" of thoracic origin was seen in a woman brought into my wards at the Polyclinic Hospital a number of years ago. She had a history of acute pain of sudden onset, and was distinctly tender in the epigastrium. A tentative diagnosis of acute gallbladder inflammation was made. On the following day there was a perfectly definite pericardial friction sound. Hence pericarditis must be put into that pigeonhole of the brain where we keep the misleading causes of the "acute abdomen."

Much more important than pericarditis as an occasional cause of acute abdominal symptoms is coronary

* Read before the Chicago Medical Society, Oct. 29, 1924.

1. Adams, F. D., and Berger, B. J.: Differential Diagnosis of Lobar Pneumonia and Appendicitis in Children, J. A. M. A. 79: 1809 (Nov. 25) 1922.

thrombosis. Intensely severe epigastric pain, shock and vomiting—as typical an "acute abdomen" as one can imagine—may be the symptomatology by which thrombosis of a coronary artery manifests itself. I have seen such a case diagnosed as gallstone colic. An interesting feature, which to my mind corroborated the diagnosis of coronary thrombosis in that case, was that the man had suffered from intermittent claudication and had no pulse in the dorsalis pedis artery.

It must be admitted, however, that it is very difficult at times to distinguish between coronary thrombosis and gallstone colic, perforated ulcer and acute pancreatitis. Careful examination may show absence of epigastric tenderness in the coronary affection, perhaps a pericardial friction sound, and slight fever. In addition, there is usually a history of precordial pain or distress, and even of genuine attacks of angina pectoris.

In one case of rupture of a dissecting aneurysm of the aorta that I saw, the pain in the beginning was so sharply abdominal that both the family physician and I thought we were dealing with a violent attack of biliary colic, and summoned a surgeon in consultation. We finally decided that the patient did not have gallbladder trouble, and that the condition originated in the heart; but the real nature of it was revealed only by the necropsy, which showed as the cause of the pain a rupture of the aorta through the wall of a dissecting aneurysm. One symptom was present in this case that I have not seen in biliary colic or other acute abdominal disease—the patient assumed the knee-chest position or rested on all fours, that being the only way in which he could get a modicum of comfort.

It is, of course, well known that the pain of true angina pectoris may be referred to the abdomen, in the region of the gallbladder. I have seen a goodly number of cases in which it was very difficult to say whether the patient had gallstones, renal colic or angina pectoris. The fact that sudden death of distinguished persons is so often attributed to acute indigestion, which rarely if ever kills suddenly, gives proof of the close similarity between the pain of abdominal and that of cardiac origin.

In this connection it is worthy of mention that gallbladder disease, as I [2] pointed out a number of years ago, may in time lead to cardiac derangements. This result is to be explained on the theory of focal infection. Hence, gallbladder trouble and angina pectoris, and gallbladder trouble and myocarditis, may come to exist together, and may be abolished by operation on the gallbladder. Sometimes the cardiac affection, although a secondary result, dominates the picture and completely obscures the underlying disease of the gallbladder. However, if the case is properly analyzed, the heart condition, other things being equal, will be found dependent on disease of the gallbladder, and will not be considered a contraindication to operation but rather an indication for it.

### OTHER EXTRA-ABDOMINAL AFFECTIONS THAT MAY CAUSE WHAT APPEARS TO BE AN ACUTE ABDOMINAL SYNDROME

First of all I would mention tabes dorsalis. The gastric crises of this affection may simulate gallbladder colic or intestinal obstruction or other abdominal conditions. Since they sometimes appear before locomotion, station or sight is interfered with, they may be misinterpreted. Operations for supposed intra-abdominal disease are not infrequently performed in such cases. If the Wassermann reaction is negative in the blood, it should be tried with the spinal fluid. I have seen two patients who had been operated on, one for gallstones, one for gastric ulcer and for gallstones, separate operations; a third patient was to be sent to operation for intestinal obstruction. All three were cases of tabetic crises. In a fourth patient, one physician had made a diagnosis of hysterical vomiting, another of intestinal obstruction. The blood Wassermann reaction was negative, but in the spinal fluid it was strongly positive. The patient died after many attacks, the necropsy proving the correctness of the diagnosis of tabes dorsalis. This patient's attacks were characterized by painless retching and vomiting; all the others suffered great torture during their seizures.

One should make it a habit to test the knee jerk in all adults with acute nonfebrile abdominal symptoms; should examine the pupils, inquire about bladder symptoms and about syphilis, and, as mentioned above, make the Wassermann test. It may not be unwise to sum up the outstanding features of gastric crises as they appeared in my cases:

1. The attacks repeat themselves with monotonous uniformity.
2. Vomiting is very severe and persistent.
3. Attacks often last as much as two weeks, reducing the patient to a skeleton.
4. Pain may be intense or it may be absent.
5. Neurologic findings suggest or prove the true nature of the case; with this proviso, that we may not find the characteristic triad Argyll Robertson pupil, absent knee jerk, and disturbed station and gait, in combination.

Uremia, that Proteus of diseases, is capable of mimicking almost any disease, from brain tumor to acute conditions within the abdomen. I have seen a patient made ready for operation on the basis of a diagnosis of intestinal obstruction, in whom I found the symptoms to be due to uremia. On the other hand, it is not uncommon to find the diagnosis of uremia based on the presence of albumin and a few casts in the urine, an intra-abdominal or pelvic lesion being overlooked. I remember a woman with persistent vomiting, abdominal pain and the urinary findings just mentioned. Her physician had made a diagnosis of uremia. Pelvic examination revealed a mass which I thought might be a twisted fibroid tumor, but which at operation proved to be an ovarian cyst twisted on its pedicle.

That tonsillitis may produce acute abdominal symptoms seems not very well known. I have seen a few such cases, of which the following may serve as a type:

F. H., aged 16 years, was taken ill with sharp pain in the right lower abdomen, vomiting and fever. There was a distinct tenderness in the appendix area; the leukocyte count was 14,000; pulse, 140; temperature, 99.4. The case looked like one of appendicitis. I was struck, however, by the intense redness of the pharynx. On the day following the onset, the abdominal tenderness was nearly gone, but the throat showed a typical follicular tonsillitis. On the third day the patient was entirely well.

My friend Dr. Conaway of Atlantic City has told me of a similar case.

It is evident that the throat is another locus which the alert physician must examine before concluding that appendicitis exists.

2. Riesman, David: The Development of Cardiac Murmurs During Attacks of Biliary Colic, J. A. M. A. 48: 1589, 1590 (May 11) 1907; Cardiac Murmurs During Attacks of Biliary Colic, Am. J. M. Sc., November, 1911.

Lead poisoning may be mistaken for intestinal obstruction. Oliver [3] speaks of a patient admitted to the surgical wards of the hospital, to be operated on for what appeared to be intestinal obstruction. There was absolute constipation, severe abdominal pain, fecal vomiting and low temperature, with signs of collapse. But as there was also retraction of the abdomen, a blue line on the gums and albumin in the urine, the patient was not submitted to operation. He died two days afterward from uremia due to plumbism. At the necropsy, the kidney was found to be atrophic and there was no evidence of intestinal obstruction. There is no reason why a lead worker should not suffer from appendicitis like other people, but the history of the occupation of the patient and a careful examination of the abdomen as to the seat and character of the pain as well as of the outline of the abdomen generally should cause us to hesitate, and not with undue haste rush into an operation.

That hysteria may feign acute conditions within the abdomen is readily conceivable. About two years ago I saw, with Dr. J. C. Doane of the Philadelphia General Hospital, a trained nurse who had once had an abdominal operation, a gastro-enterostomy, for supposed peptic ulcer. When I saw her she was vomiting, had a great deal of abdominal distention, tenderness and pain, and almost total suppression of urine. At first we thought of tuberculous peritonitis or some other more or less acute abdominal process; also of hysteria. The patient was carefully watched to see whether she was voiding any other urine than that which the nurse was able to collect, but we could not find at that time anything to support the suspicion of hysteria. The young woman went home somewhat better, but several months later she came back to the infirmary of the hospital with convulsions. Bearing in mind the suppression of urine during her previous sojourn in the hospital, we thought that the convulsions were uremic; but after she came out of them it was found that she had a corneal anesthesia and most of the hysterical stigmas which made the diagnosis of hysteria inescapable. This conclusion was abundantly substantiated by further observation. Looking back, we decided that the abdominal symptoms in the former illness had also been due to hysteria.

The following case, in the practice of a surgical acquaintance, illustrates another cause of the "acute abdomen":

A young woman was brought into the hospital with the history of being taken acutely ill with abdominal pain and vomiting. As she had, in addition, tenderness and rigidity in the right lower quadrant and a leukocytosis, a diagnosis of appendicitis was made, and steps were taken to operate. At the last moment, sugar and ketone bodies were discovered in the urine and other evidence of diabetic acidosis was found. Inquiry then brought out the fact that the girl was a diabetic patient using insulin, and that she had run out of insulin. Immediate administration of the remedy brought a prompt cure, with disappearance of all symptoms of appendicitis.

In rare instances, thyrotoxicosis produces vomiting and diarrhea of such severity that one may be easily led to suspect a primary abdominal disease. The signs of exophthalmic goiter or perhaps the history, as in a case I saw a short time ago, of a recent operation on the thyroid gland gives the explanation.

The pain of angiospasm in the lower extremities, intermittent claudication, and, in the heart, angina pectoris, is well known. That similar conditions may occur in the abdominal arteries may be conjectured, although proof is difficult to bring. I have seen a few cases in which acute abdominal pain of great severity seemed to be satisfactorily explained on this basis. The following is a case in point:

S. L. B., a man, aged 67, suffered for years from a mild form of diabetes mellitus. He came to me complaining of cramps in the legs, coming on if he walked any distance on the street. After resting for a few moments the pain would disappear and he could continue his walk. Examination showed absence of the pulse in the dorsalis pedis artery, and roentgen-ray study of the lower limbs demonstrated, with exquisite clearness, calcification of the arteries. After a time, symptoms of angina pectoris appeared, and a little later severe attacks of pain centrally located in the upper part of the abdomen. The latter pains came on with the same suddenness and disappeared with the same suddenness that characterized the anginal attacks. I attributed them to spasm of the celiac axis. There was thus in this man an involvement of three different arterial systems, but that was not all. On one occasion he complained of sudden dimness of vision. I sent him to Dr. de Schweinitz, who reported to me that the man had a tetranopsia, which we attributed to a vascular crisis in the cuneus.

The symptoms of the so-called erythema group of Osler sometimes simulate appendicitis so closely that when the underlying cause is not thought of, the wrong procedure is sure to be undertaken. A few years ago there was in my ward of the Philadelphia General Hospital a young Italian with mitral stenosis. One day he was seized with signs and symptoms of acute appendicitis. When I saw him I remembered that in cases of old rheumatic endocarditis erythema multiforme sometimes causes abdominal symptoms. Careful search revealed a few patches of eruption on the skin, and by the following day the body was extensively covered with the characteristic rash. Nothing further happened; the abdominal symptoms disappeared without residue.

One of the most curious cases of the "acute abdomen" in my memory is that of a woman, aged about 70, who was suddenly seized with sharp pain in the right upper quadrant. To those who saw her it seemed to be an attack of biliary colic. When I came to examine her, I found over the lower chest and upper abdomen on the right side a few small reddish points grouped in patches of coin size. The condition looked like an early herpes zoster. In a day or two the lesions were typical. Dr. Litchfield of Pittsburgh has reported a few similar cases.

My purpose has not been to discuss the intra-abdominal causes of acute abdominal symptoms, but to point out those extra-abdominal conditions which, in their close mimicry of truly abdominal diseases, create diagnostic difficulties and lead to errors in judgment resulting in unwise and dangerous procedures.

1520 Spruce Street.

3. Oliver: Lead Poisoning, New York, 1914, p. 139.

**Typhoid in Europe.**—A considerably increased prevalence of typhoid fever in the greater part of Europe in 1924 is shown. It was particularly marked in the Baltic regions, where the late summer and autumn incidence reported was much higher than during the preceding years, especially in Sweden, Finland, Esthonia and Latvia. An unusually large number of cases was notified also in Germany, Poland, Bulgaria and the kingdom of the Serbs, Croats and Slovenes; and less marked increases over 1923 are shown for Czechoslovakia, France, and England and Wales.—*Pub. Health Rep.* **40**:250 (Feb. 6) 1925.

# AMEBIC ABSCESS OF THE LIVER

## REPORT OF A CASE COMPLICATED BY SUBPHRENIC ABSCESS *

ALEXIUS McGLANNAN, M.D.
BALTIMORE

While amebic disease of the gastro-intestinal tract is usually associated with tropical maladies, a study of the geographic distribution of any series of cases shows that a fair proportion originate in the temperature zones. The ease and speed of travel make the discovery of an amebic lesion far from rare in any part of the world.

In Baltimore our interest in amebiasis has been stimulated by the work of Osler and of Councilman and Lafleur,[1] which definitely differentiated amebic from other forms of dysentery. I have had personal experience with four cases of amebic abscess of the liver. In one, which is the basis of this paper, the patient came from France; a second was seen in a Norwegian sailor; the third occurred in my intern days, a case of amebic abscess of the liver which ruptured into a lung, and the fourth was a fatal amebic liver abscess in an acquaintance not under my care. The patients in the last two cases were natives of Baltimore and had never been in the tropics.

The surgeon is interested in the complications of intestinal amebiasis rather than in the primary lesions. Appendectomy and cecostomy have been performed to allow irrigation of the infected bowel with various solutions. Ileostomy may be done in order to divert the intestinal contents from the ulcerated cecum and colon. Since the use of emetin has become general, these operations are seldom required. The specific action of emetin in amebiasis was proved by Leonard Rogers,[2] whose book on "Bowel Diseases of the Tropics" is a storehouse of information from which I have drawn much in the preparation of this paper.

Amebic abscess of the liver is the complication of greatest interest to the surgeon. Its extension through the diaphragm may involve the lungs, pleura or pericardium. Other conditions secondary to the intestinal infection which may require surgical operations are an abscess of the spleen, or so remote a complication as brain abscess. Locally, a walled off peritoneal abscess may be formed by the slow perforation of an ulcer. Perinephritic, postcecal and other collections of pus may result from perforation through a portion of the colon not entirely covered by the peritoneum. In certain chronic perforations, the omentum becomes adherent in the region of the ulcer, and with occasional inflammatory fibrous bands may become the cause of an intestinal obstruction. More often the obstructive symptoms are due to paralysis of a sloughing area of bowel. The acute perforations of rapid and extensive gangrenous ulcers are not amenable to surgery. E. Birt [3] of Shanghai is convinced that many cases of gastric and duodenal ulcer are due to ameba, and is positive that if a routine search were the practice in the temperate zones, it would clear up many cases of these ulcers. *Ameba histolytica* has been found in the lesions of chronic bone disease and of Hodgkin's disease, in the testis and epididymis, and also in the skin.[4]

The primary lesion in the bowel is the raised dot of Rogers, a pinhead area of exudation in the submucosa covered by a layer of intensely congested or hemorrhagic mucous membrane. This mucous membrane is soon eroded, and a yellow spot of the gelatinous material infiltrating the submucosa shows at the apex of the red dot. This early punched out ulcer becomes oval in shape with its long axis across the lumen of the bowel. Extension of the ulcer follows the course of the blood vessels encircling the bowel in the submucosa, which leads to necrosis of the overlying mucous membrane by pressure and interference with its blood supply. In this way the process extends, forming undermined ulcers with advancing edema and thickening of the submucosa. The ulcers coalesce not only on the surface but also under the mucous membrane, forming suppurating tunnels. The muscularis becomes necrosed, leaving only the serous coat, the outer surface of which becomes covered with plastic lymph containing amebas, although no actual perforation has occurred. Over such areas the omentum is very likely to adhere and limit the extent of the peritoneal invasion. In other areas the serous coat becomes perforated, and a similar localized peritonitis ensues. The extending ulcer may involve a large vessel and produce severe hemorrhage.

In the more chronic forms, healing lesions with varying degrees of cicatrization and contracture will be found along with active ulcers. The intestinal wall is then thickened and may form a sausage-like tumor. The disease portions are separated by areas of healthy mucous membrane, even though extensive gangrenous ulcers may be present. The lesions are limited to the large intestine and the terminal ileum. There is a great variation in the distribution of the lesions, as well as in their number and severity. In some cases they are limited to the cecum and ascending colon, while in others they are most prominent in the sigmoid and rectum. Ulceration of the appendix, while frequent, has not been found independent of ulceration in other areas. An important observation is the relative infrequency of dysenteric symptoms when the ulcers are limited to the higher portions of the large intestine. This fact explains the occurrence of liver abscess and other complications in patients who give no history of dysentery.

From the onset the amebas are found in the neighboring blood vessels, especially the dilated veins of the submucosa. The manner in which the amebas gain access to the blood stream is not known. It is possible that they enter from the perivascular lymph spaces, or that they pass directly through the capillary wall by their inherent power of progression or as a result of some changes in the vessel wall going on with the tissue destruction. Thrombosis frequently occurs in the vessels of the diseased area, but the presence of the amebas does not necessarily cause it. One characteristic of the specific *Ameba histolytica* is its power of ingesting red as well as white blood corpuscles. The arteries near the large ulcers show an obliterating endarteritis. In some cases the same edematous condition found in the submucosa seems to extend to the walls of the arteries.[5]

Liver abscess is the most common complication of amebic colitis. The actual route by which the ameba travels from the intestine to the liver has not been proved. The existence of amebas in the veins of the intestinal wall makes the portal circulation the most logical route for invasion of the liver. Objection to this route has been made on the ground that such an exten-

* Read before the Section on Surgery, General and Abdominal, at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

1. Councilman and Lafleur: Johns Hopkins Hosp. Rep. **2**: 335, 1891.
2. Rogers, Leonard: Bowel Diseases of the Tropics, London, Henry Frowde, 1921.
3. Birt, E.: Deutsch. Ztschr. f. Chir. **185**: 1 (July) 1921; abstr., J. A. M. A. **77**: 1142 (Oct. 1) 1921.
4. Amebic Migrations, editorial, J. A. M. A. **84**: 678 (Feb. 28) 1925.
5. Councilman and Lafleur: Johns Hopkins Hosp. Rep. **2**: 488, 1891.

sion should give rise as a rule to multiple abscesses rather than to a solitary one. (In Rogers' series there were 51 per cent. single abscesses, 25.8 per cent. two or more large ones, and 24.4 per cent. large plus several small abscesses.) To meet this objection, Rogers argues that an amebic hepatitis is produced in which there is congestion with probably thrombosis in the smaller branches of the portal veins, but in which condition there is a reaction on the part of the tissues which keeps the amebas within the walls of the thrombosed vessels. It is only when a sufficient number of adjacent veins are obstructed, and so produce an area of liver necrosis, that the amebas pass from the damaged vessels into the tissues and form abscesses.

Rogers in this way explains the formation of the fulminant multiple abscesses as well as the large single one. The large abscess becomes surrounded by a fibrous wall, and its extension is by the accumulation of material within this encapsulating membrane without further destruction of the liver tissue. The multiple acute abscesses extend into the liver substance along the veins. Successive areas of liver become necrosed as the vessels become filled with clots containing active amebas, the process extending along the veins into the liver substance.

Councilman and Lafleur admit that involvement of the liver by way of the vessels may occur, but argue that it is far more likely that amebas reach the liver by way of the abdominal cavity than by way of the blood or lymph vessels. Under such circumstances, it is their opinion that the amebas pass from the intestine into the peritoneal cavity and enter the liver directly from the hepatic flexure, or they are carried like other insoluble material along the upper surface of the liver beneath the diaphragm. The destruction of liver tissue by the ameba is preceded by diffuse necrosis of liver cells, probably the result of absorption of chemical products of the ameba from the intestinal canal. This preliminary necrosis may be confined to a few cells close to the central vein, or may extend over the greater part of the lobule. No such preliminary necrosis is found in connection with amebic abscess of the lung.

The characteristic symptoms of amebic disease of the liver may be those of acute inflammation with high fever, sweats, pain and enlargement of the liver, or there may be low continuous fever with loss of weight, digestive disturbance and slight painless enlargement of the organ. There is always a leukocytosis in which the increase of the polymorphonuclear cells is less than usually occurs in the pyogenic infections, rarely exceeding 85 per cent. In severe and late cases, there is a marked anemia, the red cells falling to about 3,000,000. A relative leukocytosis may be found under such circumstances. When there is a history of dysentery, the diagnosis is easy. In many cases there is no such history, because the few ulcers high in the colon have not given rise to dysentery, and because dysentery may be latent during the development of the hepatitis or abscess. Enlargement of the liver with fever, leukocytosis and local tenderness are symptoms of the presuppurative hepatitis as well as of the actual abscess of the liver. When the amebic disease is suspected, Rogers advises the hypodermic administration of emetin. In his experience the hepatitis is promptly cleared up by this drug, the use of which in this way distinguishes between the presuppurative lesion and the abscess.

The general symptoms of amebic abscess of the liver are remittent or intermittent fever with sweats, loss of weight and disturbed digestion. Jaundice is not common, and when present is slight in degree. Locally the symptoms vary from heaviness or dragging in the right hypochondrium to severe pain and tenderness in the same region. The pain may be referred to the right shoulder. Muscle spasm is proportionate to tenderness. The liver is enlarged. The area of dulness is increased upward, and the edge extends below the ribs. When the abscess approaches the surface, a local peritonitis will produce friction sounds.

The pain and tenderness may be so localized as to indicate the position of the abscess in relation to the overlying skin. Some of the abscesses form tender swellings in the epigastrium (left lobe abscess as a rule), or in the region of the rectus muscle (right lobe abscess). An abscess pointing in the lower surface of the liver will produce a local peritonitis. The large abscess of the right lobe gives symptoms of pressure and infiltration in the thoracic wall. Bulging of the right lower ribs, with widened spaces and areas of tenderness, is usually found. Pain in the lower right chest with a friction rub over the liver may simulate pleurisy, and the disappearance of the friction sound, as the liver becomes adherent, associated with high fever and bulging of the intercostal spaces, simulates empyema.

The roentgen ray aids in the differentiation. The high right diaphragm, which the fluoroscope shows to be stationary, and the clear shadow of the lung prove the lesion to be a subdiaphragmatic one. Some deep seated abscesses have been shown in the roentgen-ray shadow of the liver, but the great value of the roentgen ray rests on its showing the high position and immobility of the right side of the diaphragm, and in showing the condition of the lower part of the pleural cavity.

Intestinal hemorrhage may occur in the course of amebic abscess of the liver. The bleeding is severe and may be fatal. Strong [6] reports eight cases of fatal intestinal hemorrhage in patients who had abscess of the liver. He quotes from Woodward [7] that hemorrhage from the bowels is another occasional symptom of liver abscess and sometimes is the immediate cause of death.

Among the complications of amebic abscess of the liver, the most common is the extension of the process through the diaphragm with involvement of the right lung. The process is a gradual one with protection of the pleura. Empyema is a rare complication. Spontaneous opening of the liver abscess into the colon or duodenum may take place. Severe hemorrhage may take place into the abscess cavity. Secondary perihepatic abscesses are formed by the direct extension of the liver abscess into the adjacent structures. The abscess may become encysted, and spontaneous cure may result. This last fact encouraged Rogers in his aspiration and emetin treatment.

The ordinary treatment of amebic abscess of the liver is by incision and drainage of the abscess, followed by irrigation of the cavity with amebacidal solutions. Exact localization of the abscess before the operation may be impossible. Under such circumstances, aspiration of the liver is advised. This is not a harmless procedure, and it is best done after the liver has been exposed by laparotomy or other incision. The general peritoneal and pleural cavities must be protected before the aspiration is attempted. S. T. Darling [8] has observed an amebic abscess of the brain in a patient whose lung

6. Strong: Publications of the Bureau of Government Laboratories, Manila, 1905.
7. Woodward: Dysentery, Medical and Surgical History of the War of the Rebellion.
8. Darling, S. T.: Personal communication to the author.

was wounded in the course of a transpleural drainage of a liver abscess.

The hemostatic action of the cautery knife is an advantage in opening an abscess deep in the liver. Rogers advises against open drainage of amebic abscesses on account of the danger of secondary infection. He has devised a sheathed cannula and trocar with which the abscess is opened through a puncture of the skin. The sheath protects the serous cavities from contamination, and the cannula is attached to a drainage tube which ends under phenol (carbolic acid) solution beneath the patient's bed. Rogers has had great success with this method of treatment used in combination with emetin. Constantine [9] reports five successful cases of amebic abscess of the liver treated by evacuation of the abscess with immediate closure, followed by treatment with emetin.

The following is a summary of the history of a case of amebic abscess of the liver complicated by a large subphrenic abscess and a splenitis.

### REPORT OF CASE

A French sailor was admitted to the Mercy Hospital, Jan. 8, 1924, on account of fever, with severe pain in the abdomen and the right side of the chest. There was no history of diarrhea. He attributed the onset of his illness to a blow in the back received several months before while in France. At that time, he was treated in a hospital for lung abscess. No operation was performed, and he was discharged in condition to resume his work as fireman on a steamship. Crossing the ocean in December, 1923, he had some digestive disturbance, and thirteen days before his admission to Mercy Hospital, while at work, he lifted a heavy iron bar and was seized with very acute pain in the upper abdomen, so sharp that he fell into the coal bin. He was seriously sick from that time on.

On admission, Dr. Lockwood found a friction rub and dulness in the lower part of the right chest as the most prominent physical signs. The blood count showed 45,750 leukocytes with 91 per cent. polymorphonuclears. With the fever and pain, these signs led to a diagnosis of pleurisy. When the friction rub disappeared a few days later, a pleural effusion was diagnosed. At this time the patient was examined by Dr. Pincoffs in consultation. His note gives as his impression purulent accumulation either at the base of the right lung or just below the diaphragm, probably the latter. A roentgen-ray examination was advised. January 17, the roentgenogram showed a clear right lung with a high immobile diaphragm. A subphrenic abscess was then suspected.

The physical examination made the day after the roentgen-ray study showed bulging of the intercostal spaces with tenderness in the axillary line, but also a prominent tender swelling in the right rectus muscle near the ensiform cartilage. The skin in this region was red and shiny, and we decided that an abscess was pointing in this locality. A diagnosis was made of liver abscess pointing in the rectus muscle, with the probability of a secondary subphrenic abscess. At the operation, January 19, the abdomen was opened through the area of shiny skin. The muscle was found uninfiltrated. When the peritoneum was opened, the liver pushed up in the wound under great tension. Aspiration by means of a syringe failed to recover anything, but when the needle was removed, yellowish, thick pus exuded from the puncture. The liver was incised with the cautery, and the wound opened deeper with the finger. A small quantity of thick pus was discharged. Cultures from this pus proved sterile, and smears did not show amebas. The abscess drained and the patient improved for about three days. He then began to have high fever and, January 26, was quite septic. On this day, he had great pain and tenderness over the tenth rib in the posterior axillary line. A roentgen-ray examination, January 25, showed little change from the picture noted January 17. On the 26th, under procain analgesia, the tenth rib was exposed in the midaxillary line. Aspiration through the interspace brought away reddish yellow pus, which also proved sterile on culture mediums, and did not show amebas in smears. About 2 inches of the tenth rib was resected, and the abscess opened and drained through a Brewer tube. The tube was connected with a bottle, and 5 pints (2,365 c.c.) of pus was siphoned from the abscess in about half an hour. The pus from the abscess was examined several times, but no amebas were found until February 20, when scrapings from the wall showed living amebas. February 21, the administration of emetin was begun, and a 1 : 500 solution of quinin hydrobromid was used to irrigate the abscess cavity. The patient began to improve at once. On the 23d he complained of severe pain in the lower part of the left chest, with tenderness over the spleen. A roentgenogram showed elevation of the diaphragm on this side. The pain and tenderness rapidly disappeared. It was our impression that this attack was one of amebic splenitis which was cured by emetin.

The abscess cavity gradually became smaller. March 3, it held less than 2 ounces (60 c.c.) of the quinin solution. April 10, amebas were still present in the pus from the anterior wound, which was being dressed with the quinin solution. May 9, the wound in the side had narrowed to a small sinus with very little discharge. The discharge, however, contained amebas. One grain (0.065 gm.) of emetin in solution was injected into the sinus and retained there. The injection was repeated a few times until the sinus healed. Meanwhile, the anterior wound also healed, so that the patient was discharged, May 27, cured.

### COMMENT

A few of the important features of this case are:

1. The danger of closed aspiration in suspected liver abscess. At the first operation, although nothing was obtained by aspiration, pus exuded from the liver when the needle was withdrawn.

2. The difficulty of finding amebas in the pus. In spite of repeated examinations, these organisms were not found until the wall of the abscess was scraped on the twenty-fourth day after the operation. The thick bloody pus which was sterile on cultures and free from bacteria in smears made us certain that the abscess was an amebic one.

3. The prompt improvement after the general treatment by emetin and the local treatment by quinin solution was inaugurated, and the final local use of emetin. (In all, the patient was given 45 grains [2.9 gm.] of this drug.)

4. The value of the roentgen ray in distinguishing the subphrenic abscess from an empyema.

5. The occurrence of this large amebic abscess in the liver of a patient who had never suffered from dysentery.

6. The relative infrequency of the subphrenic abscess as a complication of the amebic abscess of the liver. Rogers found five such abscesses in eighty-five cases, as against thirty lung abscesses, six empyemas and three cases of suppurating pericarditis in the same series.

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9. Constantine: Internat. Abst. Surg., February, 1925, p. 128.

## ABSTRACT OF DISCUSSION

DR. DRURY HINTON, Philadelphia: For the last three years in the University Clinic at Philadelphia we have been intensely interested in the disturbances that occur in the liver following liver abscesses and subdiaphragmatic abscess. We feel that it might be possible to treat a liver abscess successfully, but the destruction of the liver has been so extreme that the patient dies as a result of lack of liver tissue. In the last ten years we have had one case of amebic abscess of the liver and seven cases of subdiaphragmatic abscess. In the same length of time there occurred eight ordinary abscesses of the liver. We have been much interested in the work done by the roentgenologic department. One cannot depend on the position of the diaphragm in the differentiation of a liver abscess from a subdiaphrag-

matic abscess. We are ardent advocates of exploratory puncture, starting high in the chest wall, to rule out empyema, which complicated subdiaphragmatic or liver abscess in three cases. Following operation, we have used a small bronchoscope through the transpleural opening. Another thing that interests us is that we believe that our subdiaphragmatic abscesses start as liver abscesses.

## THE KETOGENIC DIET IN EPILEPSY *

M. G. PETERMAN, M.D.

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During the last two and one-half years, the ketogenic, or high fat, diet has been given a trial in the treatment of epilepsy in childhood. Thirty-seven patients with essential or idiopathic epilepsy, whose parents were able to comprehend and carry out the diet intelligently at home, have been observed over periods of from four months to two and one-half years.

Twenty of the patients were boys and seventeen girls. Their ages ranged from 2¼ to 14½ years, the median average age being 8 9/10 years. Seven of the patients had grand mal convulsions, seventeen petit mal, and thirteen both grand and petit mal. Not one with obvious organic disease of the central nervous system or with any other evidence of mental deterioration was included in this series. There were hereditary taints in nineteen cases, migraine or sick headache in ten, epilepsy in three, "nervousness" in three, and syphilis in three. In nine there was a history of difficult delivery. The physical examination was essentially negative in each case. The Wassermann blood reaction was negative in all thirty-seven. The fundi were essentially normal in each. Roentgenograms of the skull were normal in the thirty-four cases thus examined. Stool examinations were made in seventeen cases, but parasites (*Endameba histolytica*) were found in only one instance, and this patient gave no history of any bowel disturbance.

Whenever there was any question about the diagnosis or whenever any organic disease was suspected, the patient was referred to the Section on Neurology, where an independent history was taken and a special examination made. Fourteen patients were referred for neurologic consultation and the original diagnosis of idiopathic epilepsy was confirmed.

The duration of symptoms ranged from two weeks to seven years, the median average duration being two and three-tenths years. The attacks in individual cases varied in frequency from one grand mal every five months to ten daily, and from three attacks of petit mal a week to 200 daily (Tables 1 to 4). In twenty-eight cases the disease was progressive; that is, the attacks steadily increased in number or severity, or both. In nine, the disease seemed to be stationary.

The literature on ketogenesis and on high fat diets was briefly reviewed in earlier reports.[1] To this literature should be added the extensive investigations reported by Weeks and others.[2] These authors observed no improvement in adult epileptic patients treated with high fat diets, although as much as 581 gm. of fat was given with carbohydrate restricted to between 1 and 5 gm., and protein to between 15.2 and 22.4 gm. The patients all showed evidences of mental degeneration and had had convulsions for a long time. The caloric values of the diets were quite high, up to 5,365 calories daily. It is difficult to explain the mild degrees of ketosis produced on these patients.

In ten cases outside my series, in which there was mental degeneration with a cerebral palsy, or an encephalitic basis, preliminary trials with the ketogenic diet did not yield results encouraging enough to warrant its continuation. In several of these cases, the convulsions have ceased but the mental deterioration has steadily progressed. It is hardly to be expected that cortical injury or degenerative processes should be influenced by dietary measures.

TABLE 1.—*Findings in Observed Cases Free from Attacks*

| Case | Age, Years | Sex* | Status† | Duration | Associated Condition | Number of Attacks Before Treatment‡ | | No Attacks for | Comment |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Grand | Petit | | |
| 1 | 9.5 | ♂ | P | 1 year | Migraine | 1 to 10 | ..... | 2.5 years | On normal diet for one year; no headache for two and one-half years |
| 2 | 9 | ♀ | S | 3 years | Pyelitis | 1 in 5 months | ..... | 2 years | On almost normal diet; pyelitis cured |
| 3 | 8 | ♂ | P | 3 years | None | 1 to 10 | ..... | 21 months | On almost normal diet |
| 4 | 9 | ♂ | P | 3 years | None | ..... | 12 | 20 months | Back on normal diet for six months |
| 5 | 6 | ♂ | P | 2 years | None | 1 weekly | ..... | 15 months | |
| 6 | 8 | ♀ | S | 20 months | None | 1 in 2 weeks | ..... | 18 months | |
| 7 | 6 | ♂ | P | 4 years | Cerebral palsy (?) | ..... | 40 to 200 | 12 months | One slight petit mal attack four months ago, after breaking diet |
| 8 | 5.5 | ♂ | P | 1 year | None | 1 in 2 months | 6 | 13 months | |
| 9 | 9 | ♂ | P | 5 months | None | 2 | 1 to 5 | 12 months | |
| 10 | 3 | ♂ | S | 2 years | Cerebral palsy (?) | 1 in 2 months | 10 to 500 | 11 months | |
| 11 | 8 | ♀ | P | 4 years | None | ..... | 1 to 10 | 7 months | |
| 12 | 4 | ♀ | S | 2 years | None | 1 in 4 months | 1 | 9 months | |
| 13 | 5 | ♂ | P | 6 months | Enuresis | 2 weekly | 2 | 18 months | No enuresis for eighteen months |
| 14 | 5 | ♂ | P | 5 months | Asthma | 1 monthly | ..... | 6 months | Two attacks asthma since |
| 15 | 6 | ♀ | S | 6 weeks | None | ..... | 3 to 6 | 5 months | |
| 16 | 7 | ♂ | P | 5 years | None | 10 in 3 months | ..... | 5 months | |
| 17 | 8 | ♂ | P | 5 years | ..... | ..... | 8 to 10 | 3 months | |
| 18 | 13 | ♂ | P | 7 months | Migraine | 2 weekly | ..... | 2.5 years | On normal diet for eight months; no headache for two and one-half years |
| 19 | 13 | ♀ | P | 18 months | Migraine | 1 in 2 months | 3 weekly | 3 months | No headache for three months |

* In this column, ♂ means male; ♀, female.
† Status of disease: P, progressive increase in number and severity of attacks; S, stationary.
‡ Daily unless otherwise indicated

### KETOGENIC DIET

The ketogenic diet, as previously described,[1] consists of a large amount of fat with minimal amounts of protein and carbohydrate. The object of the diet is to produce a ketosis as evidenced by acetone and diacetic

* From the Section on Pediatrics, Mayo Clinic.
* Read before the Section on Diseases of Children at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

1. Peterman, M. G.: Ketogenic Diet in the Treatment of Epilepsy, Am. J. Dis. Child. **28**: 28-33 (July) 1924; Ketogenic Diet in the Treatment of Epilepsy, Minnesota Med. **7**: 708-711 (Nov.) 1924.
2. Weeks, D. F.; Renner, D. S.: Allen, F. M., and Wishart, Mary B.: Observations on Fasting and Diets in the Treatment of Epilepsy, J. Metabol. Res. **3**: 317-364 (Feb.) 1923.

acid in the urine. It is especially desired to stress this objective. Several unsuccessful or indifferent results reported since the publication of the preliminary report on the ketogenic diet may be attributed partly to failure to produce ketosis of a sufficient degree.

Every patient treated with the diet is given an individual prescription. The basal metabolic requirement is determined directly or calculated from the Dû Bois normal standards. Thirty per cent. is added to the basal food requirements for growth and energy. This caloric allowance will depend on the age, weight and height of the patient, and will approximate 77 calories for each kilogram. Overweight patients are kept within their basal food requirements until their weight is reduced to approximately normal. After a few days of gradual carbohydrate restriction, 50, 40 or 20 gm. daily, with increasing allowances of fat, 70, 90 or 100 gm. daily, the patient is put on his individual prescription, which consists of from 10 to 15 gm. of carbohydrate daily, 1 gm. of protein for each kilogram of body weight, and sufficient fat to supply the remaining caloric allowance. Provision is made for the vitamins and salts. Water is allowed freely.

This diet is not well tolerated if started abruptly, but if started gradually there is little difficulty and the patients consume relatively large amounts of fat, with zeal. A good morale can be developed in the patient, with resulting cooperation which plays no small part in the successful treatment of epilepsy. Except in certain cases, the patients are not restricted in their daily routine.

Concomitant with the ketosis or shortly after the urine shows acetone and diacetic acid, there is usually a decrease or a complete cessation of the epileptic seizures. In certain cases it is necessary to decrease the carbohydrate further or to increase the fat, or both, before the attacks will cease. The ratio of 7 gm. of fat to 1 gm. of combined carbohydrate and protein was used in only one case, and this proportion has not been exceeded. No harmful results have been observed with these high fat ratios. The occasional nausea and vomiting during the preliminary carbohydrate restriction is quickly relieved by orange juice. Several patients who did not respond well to the ketogenic diet, after a trial of from four to eight weeks, were put on complete starvation for one week. The special diet was then resumed, after which the attacks ceased.

The patients usually remain under observation at the clinic for two or three weeks, or until they are free from attacks and their guardians have learned the management of the diet. Further dietary adjustment is made by correspondence. After the patients have been free from attacks for three or four months and still show a ketonuria, the diets are gradually modified. Changes are made entirely according to the reaction of the individual. The carbohydrate is increased 5 gm. every other month, alternating with an increase of 5 gm. of protein. The fat is decreased in proportion when the patient is maintaining or decreasing his body weight. If attacks occur after the patient has been free for several weeks, the menus and calculations are checked. Extraneous sources of food or errors in calculation have usually been found in such cases. If there has been no violation of the diet, the fat is increased until the attacks cease.

TABLE 2.—*Findings of Patients Improved*

| Case | Age, Years | Sex | Status | Duration | Associated Condition | Number of Attacks Before Treatment* | | Time Treated | Number of Attacks Now | | Comment |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Grand | Petit | | Grand | Petit | |
| 20 | 11 | ♀ | P | 8 days | Hysteria (?) | 1 | 2 | 12 months | ..... | 2 in 1 month | Under treatment now |
| 21 | 10 | ♂ | P | 4 years | None | ..... | 5 to 10 | 12 months | ..... | 1 daily | Under treatment now |
| 23 | 11 | ♀ | S | 2.5 years | None | ..... | 10 | 9 months | ..... | 1 monthly | Under treatment now |
| 23 | 14 | ♂ | P | 7 years | None | ..... | 5 | 5 months | ..... | 2 monthly | Under treatment now |
| 24 | 10 | ♂ | P | 2 years | None | 1 monthly | 2 to 10 | 4 months | None in two months | | Under treatment now |
| 25 | 9 | ♀ | P | 7 years | None | 1 weekly | 2 | 5 months | None in two months | | Under treatment now |
| 26 | 8 | ♀ | P | 4 years | None | 1 in 5 days | 2 to 5 | 6 months | ..... | ..... | Under treatment now |
| 27 | 10 | ♀ | P | 4.5 years | Migraine | 1 monthly | 1 | 6.5 months | 1 in 2 months | 3 a month | One migraine attack since |
| 28 | 11 | ♂ | P | 10 months | None | 1 in 3 days | ..... | 5.5 months | 1 in 5.5 months | 3 in 5 months | Under treatment now |
| 29 | 7 | ♀ | P | 2 months | None | ..... | 1 to 3 | 6 months | ..... | ..... | Under treatment now |
| 30 | 12.25 | ♀ | P | 10 months | None | ..... | 1 | 4.5 months | ..... | 3 a month | Under treatment now |
| 31 | 11 | ♂ | P | 4 years | None | ..... | 1 to 10 | 9 months | ..... | 10 a month | Not under treatment now |
| 32 | 2.5 | ♀ | P | 2 weeks | None | 3 weekly | ..... | 5 months | None in two months | | Under treatment now |

* Daily unless otherwise indicated.

TABLE 3.—*Findings of Patients Free from Attacks While Under Observation*

| Case | Age, Years | Sex | Status | Duration | Associated Condition | Number of Attacks Before Treatment* | | Time Treated | No Attacks for | Comment |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Grand | Petit | | | |
| 33 | 4 | ♂ | P | 1.5 years | None | 4 | 1 to 25 | 4 months | 3 months | Lost from observation |
| 34 | 9 | ♀ | S | 7 years | None | ... | 8 | 8 months | 8 months | Diet too difficult |
| 35 | 8 | ♂ | P | 11 months | None | ... | 10 to 12 | 3 months | 3 months | Lost from observation |

* Daily.

## CASES ILLUSTRATING THE RESPONSE TO THE HIGH FAT DIET

CASE 1.—A boy, aged 5½, was brought to the clinic because of epilepsy of one year's duration. Phenobarbital (luminal) did not control the attacks, and the child was having an average of six petit mal attacks daily and one grand mal attack every two weeks. Three days after the ketogenic diet was begun, acetone and diacetic acid appeared in the urine and all attacks ceased. There have been no attacks for thirteen months; acetone and diacetic acid have been absent from the urine for one month, and the diet is now approaching normal.

CASE 2.—A girl, aged 8, was brought to the clinic because of petit mal epilepsy of four years' duration. The patient had been treated with many drugs—phenobarbital, bromids and others—and with "gland extracts," with no success. On admission she was having from one to ten petit mal attacks daily. Three days after carbohydrate restriction reached 30 gm., acetone and diacetic acid appeared in the urine. Six days after, a gradually increasing carbohydrate restriction, a diet of 15 gm. of carbohydrate, 25 gm. of protein, and 182 gm.

of fat was instituted. For six days after the adoption of this diet, there were no attacks. On the seventh day, after eating a candy bar, the child had nine attacks, and seven the following day. During these two attacks the acetone and diacetic tests on the urine were negative. The tests again becaue positive on the ninth day and remained so for two months. During this time there were no attacks. A second candy bar was then followed by a disappearance of ketonuria, and by ten attacks of petit mal. There have been no further attacks for seven months. The diet is now 20 gm. of carbohydrate, 30 gm. of protein, and 187 gm. of fat; ketonuria is not consistently present. The mental progress has been excellent.

CASE 3.—A boy, aged 13, was brought to the clinic because of grand mal epilepsy and migraine of seven months' duration. The grand mal attacks occurred every two weeks and were often associated with migraine. A diet of 15 gm. of carbohydrate, 57 gm. of protein, and 231 gm. of fat was begun. Ketonuria appeared on the second day, and there were no headaches or convulsions for twelve days. On the thirteenth day the urine was negative for acetone bodies, and the patient had two convulsions. There is no knowledge of dietary indiscretion. There have been no further attacks of epilepsy and no headaches for two and one-half years. The diet was continued for one year, after which the fat was gradually decreased and the carbohydrate and protein increased. The boy has been on a normal diet for eight months and is now working on a farm.

adjustment of the diet in an effort to control the convulsions. Three patients were free from convulsions for from three to eight months, but have not been heard from since. One patient made no improvement; another, who is still under treatment, was not free until two weeks ago.

All thirty-seven patients have developed normally, according to reports from the family physician or from the parents. Ten of these, examined at the clinic from six to twelve months after the diet was begun, had made normal physical development. The basal metabolic rate, determined in three patients, was normal; roentgenograms of the bones of the five patients photographed showed no abnormalities, and the blood chemistry studies made in four cases showed normal values for urea, sugar, and carbon dioxid combining power (Table 5). Acetone and diacetic acid were, of course, present in the blood serum and in the urine. Further chemical studies of the blood are in progress and will be reported later. The mental development has been normal in all the patients, and exceptionally good in seven of the twenty who are now free from attacks. In all the children treated with the ketogenic diet there was a marked change in character, concomitant with the ketosis, a decrease in irritability, and an increased interest and alertness; the children slept better and were more easily disciplined. This action of the diet warrants further study.

TABLE 4.—*Findings of Patients Not Improved*

| Case | Age, Years | Sex | Status | Duration | Associated Condition | Number of Attacks Before Treatment* | | Time Treated | Petit Attacks | Comment |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Grand | Petit | | | |
| 36 | 11 | ♀ | S | 8 months | None | 0 | 3 | 12 months | 1 in 8 days | Still under treatment |
| 37 | 12 | ♀ | S | 12 years | Father has syphilis | ... | 5 to 100 | 2 months | 2 in 50 days | Gave up diet† |

* Daily.
† Has recently returned for further treatment.

TABLE 5.—*Findings in Ten Cases from Three days to Twelve Months After Institution of Diet*

| Case | Weight, Pounds | Diet: Grams: Carbohydrate | Protein | Fat | Total Calories | Time on Diet | Blood Chemistry*: Mg. for Each 100 C.c.: Urea | Sugar | Acetone | Per Cent. Carbon Dioxid Combining Power | Urine: Mg. for Each 100 C.c. Acetone | pH | Attacks | Comment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 24 | 84 | 12 | 41 | 176 | 1,849 | 3 days | 21 | 91 | .... | 66 | 4.90 | 5.5 | 1 in 4 days | |
| 24 | 84 | 12 | 41 | 176 | 1,849 | 30 days | .. | .. | 21.0 | 52 | 5.70 | 5.7 | None | |
| 16 | 45 | 10 | 20 | 120 | 1,236 | 6 days | 11 | 72 | 33.1 | 35 | 3.00 | 4.4 | None | |
| 38 | 65 | 12 | 30 | 124.4 | 1,325 | 7 days | 10 | 67 | 34.6 | .. | 6.73 | ... | 1 a day | |
| 38 | 61.5 | 12 | 30 | 134.4 | 1,334 | 11 days | .. | 65 | 31.6 | .. | 9.86 | ... | None | |
| 32 | 81 | 10 | 14 | 100 | 1,026 | 15 days | .. | 54 | .... | .. | 7.50 | 7.8 | 1 a week | |
| 26 | 47 | 12 | 27 | 106 | 1,142 | 30 days | 12 | 80 | 26.8 | .. | 2.40 | ... | None | |
| 29 | 54 | 12 | 25 | 117 | 1,228 | 22 days | 17 | 74 | 34.3 | 44 | 12.00 | ... | 1 in 2 days | |
| 11 | 58.5 | 12 | 25 | 188 | 1,846 | 4 months | .. | 87 | .... | .. | 4.20 | ... | None | |
| 12 | 75 | 15 | 34 | 147 | 1,563 | 3 months | 20 | 82 | 14.1 | 32 | 6.01 | 5.4 | Many petit mal attacks | On ammonium chlorid |
| 12 | 75 | General | .. | ... | 1,800 | ..... | 33 | .. | .... | 42 | .... | 5.4 | None | On ammonium chlorid |
| 39 | 108 | 15 | 50 | 171 | 1,850 | ..... | .. | 86 | 23.0 | 40 | ++ | 7.3 | None | |

* Studies on blood chemistry made by Martha Aldrich, Medical Laboratory, St. Mary's Hospital.

## RESULTS

The results from treatment have been very encouraging (Tables 1 to 4). Of the thirty-seven patients treated, nineteen are now entirely free from attacks. Eight of the nineteen have been free from convulsions for from one to two and one-half years, the remaining eleven for from three months to one year. Several patients had been free for from one to eight months, when indiscretions in the diet, usually carbohydrate indulgence, caused one or more attacks. Purging and resumption of the prescribed diet immediately controlled the convulsions. Thirteen patients have been considerably improved, that is, the number and the severity of their attacks are now considerably diminished, and twelve of the thirteen are still undergoing

Special attention is called to the fact that five of the patients have gone through severe infections, including scarlatina, pertussis and acute upper respiratory infections, with normal convalescence. The diets were not altered during the illnesses.

Three patients are again on normal diets, after nine, twelve and twelve months of treatment, respectively. These three patients, two of whom have been reported elsewhere,[3] are still free from convulsions. Several

3. Peterman, M. G.: Ketogenic Diet in the Treatment of Epilepsy: Report of two Cases, M. Clin. N. Am. 8: 1351-1352 (Jan.) 1925.

others are now receiving increasing amounts of carbohydrate and protein, with correspondingly decreasing amounts of fat. The diets are being adjusted by correspondence; hence the results are not so satisfactory as they would be if the patients were under immediate supervision. Only two patients are now receiving phenobarbital in addition to the ketogenic diet. The dose of phenobarbital is less than half the amount necessary to control attacks when the patients are on a general diet.

### CLINICAL TESTS

The following clinical tests were carried out in some of the cases in this series. In certain cases an attempt was made to produce ketonuria by other means than a special diet, or in addition to moderate dietary changes. Haldane [4] has observed that ketosis could be produced in normal subjects on a normal diet when sodium bicarbonate was administered in doses of 0.6 gm. for each kilogram of body weight, but the nausea, diarrhea, and so forth, resulting from large doses made it impracticable to carry out this procedure in more than one case. This patient had from ten to twelve attacks of petit mal daily. Ketonuria was produced on the second day of treatment wtih the dose specified, but the attacks continued the same.

Hubbard and Wright [5] observed that when the carbohydrate allowance in the diet was limited to 10 or 12 per cent. of the daily caloric requirements, with moderate protein restriction and a moderate increase in fat, ketosis could be produced with small doses of sodium bicarbonate; namely, 20 grains (1.3 gm.) three times each day. Four patients who had from three to ten attacks of petit mal daily were put on diets of from 40 to 50 gm. of carbohydrate daily, 1 gm. of protein for each kilogram of body weight, and fat to make up the total daily requirements. The ketosis threshold thus approached was then determined by the addition and subtraction of carbohydrate food. A diet including from 45 to 50 gm. of carbohydrate prevented the appearance of ketonuria, but 1.5 gm. of sodium bicarbonate administered three times a day to patients on this diet provoked the ketonuria. Larger doses of soda, 6 gm. daily, increased its degree. The attacks of petit mal continued the same in two cases, and increased in the other two. When soda was continued in doses large enough to alkalize the urine, and the diet was reduced to 12 gm. of carbohydrate, 1 gm. of protein for each kilogram of body weight, and sufficient fat to make the total caloric intake 30 per cent. above the basal metabolic requirement, the attacks still continued the same, although the urine contained acetone and diacetic acid. Twelve hours after discontinuing the soda, the urine was acid and still contained acetone and diacetic acid. There was, however, an immediate reduction in the number of attacks, and twelve hours later they had ceased entirely.

Three children who had been free from epileptic attacks for three, three and nine months, respectively, on the ketogenic diet were given enough soda to alkalize the urine. The soda was continued for one week, and no attacks of epilepsy were provoked.

It was next attempted to reduce the production of acetone and diacetic acid by substituting "intarvin," the odd-carbon fat, for the natural fats. Intarvin on incomplete oxidation is said to yield pyruvic acid instead of the acetone and diacetic acid of the even-carbon fats. Only from 28 to 56 gm. of intarvin could be fed to a patient daily because of the unpleasant taste. Three patients having from five to twenty attacks of petit mal daily were put on the full ketogenic diet, and after they had been free from attacks for one week, 28, 35 and 56 gm. of intarvin was substituted for the usual fats without provoking attacks. Two patients, on 28 and 35 gm. of intarvin daily, continued to have acetone and diacetic acid in the urine. One patient on 56 gm. of intarvin daily showed no diacetic acid. When the natural fats were replaced in the diet, the diacetic acid reappeared.

Incomplete studies seem to indicate that diets restricted to acid-producing foods have no influence on the convulsions of epilepsy even when the ketosis threshold is approached by moderate carbohydrate restriction. Further and more complete studies are being made as clinical material permits.

### COMMENT

It is too early to offer an explanation for these results. Much work is necessary, and a better understanding of ketosis is essential. Wilder originally proposed ketogenic or high fat diets for the treatment of epilepsy on the theory that aceto-acetic acid should behave pharmacologically as an anesthetic and reduce the reactivity of the nerve cell.[6] Suffice it to say at present that ketonuria with the high fat diet is a practical guide to treatment, even though it is not the only factor concerned in the metabolism. Acidosis is possibly a factor in controlling the attacks.

There is considerable evidence that the convulsions of epilepsy are associated with a metabolic disturbance. The capricious and inordinate appetites, the chronic constipation and the histories of "stomach trouble" and of "food reactions," the periodic recurrence of attacks, the nature of status epilepticus, the increased toxicity of the urine obtained during attacks, and, in women, the cessation or the primary appearance of attacks during pregnancy, all suggest coincident, if not primary, metabolic disorder. Perhaps the most convincing evidence of metabolic disturbance is the response of epileptic patients to treatment. In the earlier cases of pure idiopathic epilepsy in children, the response to treatment with the ketogenic diet is striking. The work of Talbot and others on starvation is well known, and the results obtained by hydrotherapy, purging, by regularity of daily habits, or, best, by a combination of all these adjuncts, need no further mention. Psychotherapy is, of course, not to be overlooked.

### SUMMARY

Thirty-seven patients with essential epilepsy have been treated for periods of from three to thirty months by means of a high fat diet sufficiently restricted in carbohydrate and protein to produce ketosis. In two patients, no change was noted. One patient improved while under control, but was lost from observation. Three patients remained free from convulsions for from three to eight months, and were then not heard from. Twelve have improved, and nineteen have been free from attacks since the institution of this treatment. Thirty-two are still under observation. The general physical development and growth have been normal; mental development has also been normal, and exceptionally good in certain cases. Resistance to infection seems in no way diminished by this form of treatment.

4. Haldane, J. B. S.: Influence of Hydrogen Ion Concentration Changes on Human Metabolism, Abstracts of Communications to the XI International Physiological Congress, Edinburgh, July 23-27, 1923, quoted by Hubbard and Wright (Footnote 5).

5. Hubbard, R. S., and Wright, F. R.: An Experiment on the Effect of Sodium Bicarbonate and of Intarvin on the excretion of Acetone, Proc. Soc. Exper. Biol. & Med. 22: 70-71, 1924.

6. Peterman (Footnote 1, first reference).

## ABSTRACT OF DISCUSSION

DR. HERMAN SCHWARTZ, New York: I should like to corroborate the work of Dr. Peterman. In three cases I have had the most striking results with the ketogenic diet. I have tried it in a few cases of chorea, but not enough to make the basis of a report.

DR. R. H. SPANGLER, Philadelphia: I should like to ask Dr. Peterman whether an eosinophilia was noted in his patients. If differential blood counts were made after the ketone bodies appeared in the urine, was there any modification in the percentage of eosinophils? Epilepsy presents a symptom complex of disturbed metabolism. Eosinophilia is indicative of a sensitization condition.

DR. M. G. PETERMAN, Rochester, Minn.: The diet has been tried in several cases of chorea, but I do not feel that they have been favorably influenced. I have seen several of the chorea cases treated in New York, and I do not think there has been any improvement. We have tried it in many cases of birth palsy and in encephalitis residue and in birth convulsions. In one case the convulsions were stopped entirely. I do not think, however, that we are justified in using the diet in every type of convulsion, especially in mental defectives that have progressed beyond dietary relief. Not all cases respond to it. Eosinophilia varies so much in children that I have hesitated to place very much importance on this finding. I do not feel as Dr. Joe Miller does about protein anaphylaxis. Von Loewen has ruled this out. In one case, in which there were attacks of asthma and epilepsy, the attacks of epilepsy have ceased, the asthma continues. In regard to calories, the patients received 10 gm. of carbohydrate and 1 gm. of protein per kilogram of body weight, and the rest of the caloric intake was supplied by fat. The requirement is calculated by the Du Bois standard, 30 per cent. being allowed for energy. After the patient is down to normal weight, or with loss of weight more fat may be added; also if the convulsions do not respond, more fat is added. Should any untoward effects give us concern, we can at once neutralize the effect by giving orange juice.

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# DIPHTHERIA OF THE SKIN

### REPORT OF FATAL CASE *

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AND
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While reports of diphtheritic infection of the skin are fairly frequent, it seems worth while to place this case on record since the virulence of the diphtheria bacilli was determined, and necropsy was done. In most of the reported cases of skin diphtheria, such as those of Reinhardt,[1] the presence in the lesions of organisms morphologically resembling diphtheria bacilli and a favorable response to treatment with diphtheria antitoxin have been considered sufficient criteria for the diagnosis. However, the prevalence of diphtheroid bacilli on the surface of the body, and the not infrequent value in skin disorders of injections of nonspecific protein, tend to vitiate the reliability of those diagnostic methods.

Edelstein-Halpert[2] reports a number of cases in which diphtheria bacilli were recovered from various skin lesions not suggesting diphtheria, in five of which the virulence of the organisms was found, and two cases of clinical skin diphtheria in which the bacilli were in symbiosis with streptococci.

In the case reported here, the skin lesions of varicella afforded portals of entry for the diphtheria bacilli.

### REPORT OF CASE

*History.*—A boy, aged 5 years, whose family history and past history were unimportant except that he was subject to rhinitis, was admitted to the South Department for treatment with the diagnosis varicella at 9:45 p. m., July 2. Eight days before, his body showed many small vesicles, widely distributed. Seven days before, the patient began to have a mucopurulent discharge from the nose. The following day the lesions were more numerous, there being about fifty, scattered over the whole body. A few of them had become quite irregular and increased in size; the largest was about 3 cm. in diameter and was situated over the proximal end of the shaft of the penis. At this time the mucopurulent discharge from the nose became somewhat bloody. The vesicles lasted two days and then ruptured, expelling a clear serum. Crusts formed, and four days before entrance the larger lesions became inflamed, a narrow zone of redness surrounding the brownish colored crusts. The patient became somnolent and listless. Up to the day of admission the infected lesions gradually increased in size, the crusts taking on a reddish brown color. Hemorrhagic crusts formed in the nose, and on several occasions bleeding occurred in small amounts. At no time had the patient a sore throat, dysphagia or hoarseness. On the morning of the day of entrance, he began to vomit everything taken by month.

*Examination.*—The patient was fairly well developed and nourished. He was apathetic and slightly restless. There was a generalized pallor of the skin. The facies was somewhat drawn. There was internal strabismus of the right eye (present from infancy). The pupils reacted to light and to distance. There was no conjunctivitis. Both nostrils were plugged with bloody crusts, on the left extending just below the orifice. On the scalp were nits but no pediculi, and no dandruff or crusting. The mouth was held partially open. The tongue was slightly coated. The buccal mucous membranes showed no Koplik spots or ulcerations. The faucial ring was not reddened. The tonsils were present but not prominent. There was no membrane or exudate. The soft palate ascended in the midline on phonation. There were several nontender lymph nodes about 0.5 cm. in diameter at the angles of the jaws.

The skin showed about forty crusted lesions varying in diameter from 1 mm. to 3 by 5 cm. widely scattered over the neck, trunk and extremities but none on the face, hands or feet. There were twelve lesions showing a hemorrhagic or reddish brown crust, which was tough and adherent to the underlying tissue. They were surrounded by a zone of redness about 1 or 2 mm. in diameter. The largest lesion, 3 by 5 cm., lay over the right side of the abdomen. Another, 3 cm. in diameter, lay over the upper part of the sternum. A third almost completely surrounded the proximal end of the shaft of the penis, varying in width from 1 to 1.5 cm. and 3 cm. in length. This lesion had produced slight constriction of the penis, resulting in swelling and edema of the distal end. The regional lymph nodes were palpable, nontender and about 0.5 cm. in diameter. The next largest lesion measured about 2 cm. in diameter and was situated just anterior and below the right axilla. The remaining lesions, about 1 cm. in diameter, occurred one on each side of the neck, three on the back, one on the left side of the body, and two on the left thigh. Roughly estimated, the combined surface area of these lesions measured about 49 sq.cm. There were also about the same number of lesions varying in diameter from 0.5 to 2 cm., with brownish crusts that could be easily separated from the underlying tissue, and which on removal exposed a small amount of purulent exudate. A couple of these lesions showed a heaping up of the crusts to the height of 2 or 3 mm. Three others showed the remains of vesicles, which surrounded the crusts, forming a zone 2 or 3 mm. wide and containing a purulent exudate. The remaining crusts were dry, measuring from 1 to 2 mm. in diameter, and on separating from the underlying tissue left small depressions or pittings in the skin.

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* From the Pathological Laboratory and the South Department, Boston City Hospital.

1. Reinhardt, L.: Hautdiphtherie im frühen Kindersalter, München. med. Wchnschr. **71**: 610 (May 9) 1924.
2. Edelstein-Halpert, A.: Diphtheriebazillen auf der Haut von Säuglingen, Ztschr. f. Kinderh. **36**: 84, 1923.

The respiration was 25, normal in character. An examination of the lungs showed no areas of dulness or bronchial breathing, and no râles. The borders of the heart were not definitely made out, but by percussion the left border appeared to be 0.5 cm. outside the left nipple line. The rate was 60, irregular, with extrasystoles occurring every few beats. The sounds were of poor quality, with a reduplication of the second. Over an area 2 by 3 cm., just inside and below the left nipple, there was a grating sound during systole suggesting a pleuropericardial rub. There were no murmurs. The pulses were of poor quality and irregular, with no pulse deficit. The pulse rate was 60. The abdomen was sunken. The spleen and liver were not felt. There was no tenderness, spasm or masses. The cremasteric reflexes and knee jerks were active and equal. The temperature on entrance was 97 F.

*Course.*—During the two days following admission the patient continually vomited all food that was given by mouth. Rectal feeding was then substituted and the patient kept flat on his back.

The heart sounds became gradually weaker and the pulse rate was not obtainable for the last twenty-four hours. The extrasystoles became more numerous, one occurring about every third or fourth beat. The rate by auscultation was from 44 to 50 a minute. The temperature remained subnormal, 97 F. The respiration increased to 30 a minute, the lungs remaining normal.

The palatal and cremasteric reflexes and knee jerks remained present to the last. The skin condition remained about the same, except that the hemorrhagic crusts darkened to almost a deep black. About forty-eight hours after admission the patient suddenly collapsed; he died a few seconds afterward.

A culture taken from the nose on entrance showed the presence of diphtheria bacilli. The Schick test done on admission showed no reaction at the point of injection of either toxin or control. No antitoxin was given. A culture was taken from one of the hemorrhagic crusted lesions at the junction of the membrane and the underlying tissue. This area had been sterilized first with iodin, and then the crust was removed with a sterile knife. This culture showed diphtheria bacilli, which were later proved to be virulent by the intradermal method. The blood Wassermann reaction was negative. The blood culture showed no organisms. The examination was otherwise negative.

*Necropsy Findings.*—An external examination of the body twelve hours after death showed the same lesions as described above. There was no free fluid in the peritoneal cavity. The surfaces were smooth and shining. The diaphragm was at the fifth space left, and the fourth space right. The mesenteric lymph nodes were slightly enlarged. The heart weighed 110 gm. The myocardium was pale and flabby. Both lungs were pale, soft, and crepitant, with scattered, firm portions. On section they were somewhat moist, with small, dark red, firm foci. There was pus in the left bronchus. The spleen weighed 70 gm. The capsule was wrinkled. On section it was purplish; much pulp scraped away; the lymph nodes were not prominent. The liver weighed 620 gm. The capsule was smooth. The tissue was yellowish and dry, and the markings indistinct. The bile ducts were patent. The kidneys weighed 130 gm. The capsule stripped readily from a smooth surface. The glomeruli were visible; the pyramids were well marked. The cortex measured 0.3 cm. The trachea was slightly injected.

The anatomic diagnosis was: multiple foci of necrosis of the skin; varicella, late, and bronchopneumonia (slight).

On microscopic examination, the heart showed numerous foci of necrotic muscle fibers with infiltration by polymorphonuclear and endothelial leukocytes and rare eosinophils. Other foci showed loose fibrous tissue infiltrated by endothelial leukocytes and rare polymorphonuclear leukocytes and eosinophils. Some muscle fibers were vacuolated. The lungs were congested. A small amount of serum and a few endothelial leukocytes were present in the alveoli. There were occasional foci of lymphocytes about the bronchi. The spleen was congested. Some lymph nodules contained old fibrin in their centers; others contained phagocytic endothelial leukocytes. There was postmortem change in the pancreas. In the liver there was an extensive central necrosis involving more than half of each lobule; occasionally, bits of fibrin were present. Some liver cell nuclei were vacuolated. There was slight periportal lymphocytic infiltration. In the kidney there was edema of the tubules. A few albuminous granules were found in the lumina of the tubules. There were phagocytic endothelial leukocytes in the lymph nodules. Rare eosinophils and plasma cells were present in the pulp. The trachea contained a few endothelial leukocytes and rare polymorphonuclear leukocytes in the submucosa. A small amount of fibrin and necrotic leukocytes were seen on the surface of the skin with cocci and bacilli resembling *B. diphtheriae*. The epidermis and corium were necrotic and dried.

A culture of the heart's blood showed no growth. A culture from beneath the crust of the lesion on the chest yielded *B. diphtheriae*, proved virulent by the intracutaneous method, and *Staphylococcus aureus*. The necropsy findings otherwise were negative.

## COMMENT

To sum up, we have here the microscopic findings consistent with toxemia due to infection with *B diphtheriae*, together with typical diphtheritic ulceration of the skin. In addition, the recovery of virulent diphtheria bacilli from the nostril and from one of the skin lesions definitely stamps the case as one of diphtheria.

The virulence of the bacilli was determined by the intracutaneous method. We regard this method as being fully as reliable as the subcutaneous, and use it as a routine for all determinations of virulence. As a matter of fact, the guinea-pig on which the virulence test was done died the fifth day after inoculation. Necropsy showed that death was due to diphtheria. The control pig, protected by 1,500 units of antitoxin, was not affected.

The Schick test done in this case at entrance was negative, a finding that is rather surprising in view of subsequent death from diphtheria. However, within the last fourteen months, the staff of this laboratory has performed necropsies for the Massachusetts Department of Public Health in two cases clinically resembling diphtheria and demonstrated to be diphtheria at necropsy, which had given negative Schick tests shortly before the onset of the disease. In both cases the organisms were proved to be *B. diphtheriae* and to have a very high degree of virulence.

The absence of membrane in the nasopharynx and the development of symptoms only as the skin lesions became infected led us to believe that the toxemia resulted from diphtheria of the skin. Some of the lesions of varicella in all probability were infected with virulent bacilli from the nose, as a result of scratching, and developed into the typical crusted lesions of diphtheria of the skin. In 1910, Place [3] reported a case of primary cutaneous diphtheria, the only one that has come to necropsy at this laboratory. The skin lesions of this earlier case are similar to those in the present case.

## SUMMARY

The skin lesions of varicella in a 5 year old boy took on an impetiginous character and became infected with *B. diphtheriae*, probably transferred from the nostrils by scratching. They gradually progressed to extensive hemorrhagic crusted lesions covering about 49 sq.cm. of body surface. Death apparently was due to toxemia, and the necropsy findings were consistent with infection with *B. diphtheriae*. Virulent diphtheria bacilli were recovered from one of the skin lesions, and the histologic picture of the lesion is that of diphtheric ulceration. Sections stained by the Gram-Weigert method showed bacilli morphologically resembling *B. diphtheriae*.

3. Place, E. H.: Cutaneous Diphtheria, Primary Fatal Case, Boston M. & S. J. **163**: 730, 1910.

# THE FUNGICIDAL ACTIVITY OF CERTAIN VOLATILE OILS AND STEAROPTENS

## THEIR COMPARATIVE TOXICITY ON A PATHOGENIC YEASTLIKE ORGANISM: REPORT OF CLINICAL UTILIZATION IN RELATED INFECTIONS *

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The fruit packing plants of the Pacific Northwest have been troubled for several years with a dermatosis developing among employees engaged in preparing the fruit for canning. The lesion has been referred to by those affected as a "fruit poisoning." It has been treated without much success by a great variety of means, chiefly by the antiseptics commonly utilized in treating bacterial infections.

A person with an interdigital lesion that originated while employed in one of the fruit packing plants came to our attention a few months ago. The infection referred to had persisted for several months in spite of the use of various prescribed standard antiseptics. Scrapings from the lesion revealed budding spore forms with mycelium attached, which we believed to be responsible for the inflammatory reaction. A 10 per cent. alcoholic solution of the oil of cinnamon was painted over the inflamed area. Rapid improvement in the appearance of the lesion, progressing to healing, followed the application of the cinnamon solution. It might be remarked that the oil of cinnamon was tried because of its efficacious use against mold growth in such preparations as the infusion of digitalis and in mistura cretae.

The canning plant in which the lesion referred to had originated was visited during the next pear canning season. The infection known as fruit poisoning had been particularly severe during the time pears were handled, in previous years. Many cases of infection, similar in gross pathology and in cultural findings to the one we had originally seen, were found. These lesions healed rapidly with the use of spirit of cinnamon. We understand from the manager of the plant and the chemist employed that the directed use of cinnamon water was efficacious as a prophylactic measure in preventing a greater number of infections.

A report of a dermatologic study of the lesion produced by this pathogenic yeastlike organism has recently been made by Kingery and Thienes.[1] Experimental inoculations in man and animals resulted in lesions similar to those found in the fruit workers.

The favorable action of oil of cinnamon on the original and experimental lesions led to an investigation of the comparative toxicities of several volatile oils and stearoptens on cultures of the pathogenic yeast responsible for the infections.

### EXPERIMENTAL METHODS

It was considered advisable to avoid the complicating action of any solvent of the volatile oils other than water. The preparation of official aquae of the volatile oils is directed by the United States Pharmacopeia. While differences in the water solubilities of the several volatile oils considered must exist, the aquae, as saturated aqueous solutions, are usually considered to be between 0.1 and 0.2 per cent. strength. Greater differences in strength exist between the aquae of the stearoptens included in this study. Comparison of fungicidal power was made with a 1 per cent. aqueous solution of phenol (carbolic acid).

Twenty-four hour cultures of the yeast in meat-extract broth were exposed to aquae of several volatile oils and stearoptens. At definite time intervals, subcultures were made into meat-extract broth and incubated at 35 C., previously found to be the optimal temperature for this organism. Following twenty-four hours' incubation of the subcultures, streak inoculations were made on plates of Sabouraud's medium. The results of these cultural tests are shown in the accompanying table.

Considerable variation has been found in the fungicidal powers of the oils studied on the yeastlike organism responsible for the so-called fruit poisoning. For example, the yeast grows just about as luxuriantly in the aqua of oil of lemon as it does in the broth medium. Thymol is about the least soluble in water of all the stearoptens and oils studied so far. The aqua thymolis destroys the yeast in sixty seconds or less. Phenol in 1 per cent. solution requires sixty minutes to kill the organism. The most efficient volatile oils are cinnamon and cloves, requiring approximately thirty and ninety minutes, respectively, to prevent growth of the yeast. The majority of the oils, camphor and menthol, in saturated aqueous solution did not apparently inhibit the growth of the yeast in 100 minutes.

*Comparative Fungicidal Power of Certain Volatile Oils and Stearoptens on a Pathogenic Yeast*

| Aquae | Minutes Required to Destroy Pathogenic Yeast | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 24 Hrs. |
| Thymol | — | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Cinnamon | + | + | + | ± | — | .. | .. | .. | .. | .. | .. | .. |
| Clove | + | + | + | + | + | + | + | + | + | ± | — | .. |
| Menthol | + | + | + | + | + | + | + | + | + | + | + | — |
| Peppermint | + | + | + | + | + | + | + | + | + | + | + | — |
| Camphor | + | + | + | + | + | + | + | + | + | + | + | — |
| Methyl salicylate | + | + | + | + | + | + | + | + | + | + | + | — |
| Turpentine | + | + | + | + | + | + | + | + | + | + | + | — |
| Eucalyptus | + | + | + | + | + | + | + | + | + | + | + | — |
| Toluene | + | + | + | + | + | + | + | + | + | + | + | — |
| Lemon | + | + | + | + | + | + | + | + | + | + | + | + |
| Phenol, 1 per cent. | + | + | + | + | + | + | — | .. | .. | .. | .. | .. |

+ indicates growth; —, no growth; ±, feeble growth in minority of cultures; majority sterile.

### CLINICAL USE

A mixed spirit composed of 5 per cent. thymol and 2 per cent. cinnamon, painted on sites of infection found on employees in the canning plant previously mentioned, was found to cause a speedy relief of discomfort and promotion of healing.

The efficient action of thymol and cinnamon oil in the treatment of the moniliosis of the fruit handlers has led to a trial of its service in several infections due to different types of fungi. The results briefly have been as follows:

Several patients with epidermophyton infection between the toes and on the soles of the feet have had prompt relief and a resulting healthy skin from the use of the thymol and cinnamon mixture referred to. One student stated that his infection had started as "trench-foot" disease while in service overseas. Several of those with this type of infection had used Whitfield's ointment and other remedies with but partial relief.

* From the Department of Pharmacology, University of Oregon Medical School.

1. Kingery, L. B., and Thienes, C. H.: Mycotic Paronychia and Dermatitis: Hitherto Undescribed Condition Apparently Peculiar to Fruit Canners, Arch. Dermat. & Syph. 11: 186-202 (Feb.) 1925.

Hand infections caused by a sarcinae type of organism, producing minute, coalescing vesicles, particularly when the finger surfaces were in apposition, showed improvement in less than twenty-four hours following the application of the spirit, and disappeared in a few days. Three additional cases of sarcinae infection in other parts of the body, each one of long standing, yielded promptly to the use of thymol and cinnamon solution. Two of the three patients mentioned stated that they had used numerous ointments and lotions, and had received actinotherapy.

Two persons with pulmonary mycosis have been given thymol in capsule, and thymol with cinnamon oil by inhalation of nebulized solution in liquid petrolatum. One patient exhibiting symptoms of steadily increasing pulmonary involvement previous to taking the drugs mentioned has shown constant pulmonary and general improvement following a period of about six weeks in an apparently stationary condition. The organism believed responsible, apparently *Aspergillus niger,* is steadily disappearing from the sputum. In the second case of pulmonary infection referred to, the drugs have been given for less than four weeks, and there has been no change to date.

A low-grade acute infection of the forearm, producing an amber colored discharge, yielded a budding yeast producing a yellow pigment on Sabouraud's medium. Pain and itching stopped in a few hours following the application of a wet dressing of the thymol and cinnamon solution. Healing occurred promptly.

A patient with actinomycosis of the face and neck, failing to improve under deep roentgen-ray treatment, was given large doses of sodium iodid with resulting improvement. The improvement under iodid apparently progressively lessening or at a standstill with dosage exceeding 40 gm. daily, further administration of the salt was stopped, and thymol given twice a week in doses increasing from 0.5 gm. to 1.5 gm. Definite improvement in the appearance of the lesions followed the use of thymol, and the patient left the hospital apparently cured after two months' use of thymol, without other medication during that time. He is now under observation in the outpatient department without evidence of recurrence to date.

It is impossible to state what part the thymol played in the improvement of the case of actinomycosis. Further trial in such cases will establish its relative merit.

The infections mentioned have been encountered in a limited number of persons, without particular search, giving us the impression that infections of this type may be more common than is generally considered to be the case.

The volatile oils are known to have a particular toxicity toward molds and yeastlike organisms. They have apparently not received the attention in clinical application that their activity warrants. In a report on studies in the chemotherapy of fungus infections,[2] thirty medicinal agents are mentioned without the volatile oils being included. One gains the impression from the recent literature on mycotic infections that the volatile oils are not made use of to any noticeable extent, in treatment.

SUMMARY

Thymol, oil of cinnamon and oil of clove have been found particularly efficacious in destroying a pathogenic yeastlike organism responsible for an occupational dermatitis.

The drugs mentioned have been found equally valuable in causing an immediate improvement progressing to healing of infections apparently due to fungoid organisms of several types.

The results reported warrant further trial of the volatile oils and stearoptens in infections due to fungoid organisms.

2. Schamberg, J. F., and Kolmer, J. A.: Studies in the Chemotherapy of Fungus Infections, I, The Fungistatic and Fungicidal Activity of Various Dyes and Medicaments, Arch. Dermat. & Syph. **6**: 746-756 (Dec.) 1922.

## MELANOMA OF THE RECTUM

### REPORT OF CASE *

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The literature on the subject of melanomas is being constantly augmented by additional reports of the occurrence of this condition. Most of these reports deal with instances of tumors which have arisen in the usual sites, namely, the congenital nevi of the skin, the pigmented choroid of the eye, and the choroid plexus, but which present certain features of interest worthy of record. However, melanomas are described that arise from cells in which pigment is not known to be present normally; e. g., the ovary,[1] the ileum, the rectum, the common bile duct and the suprarenals. Such observations have developed some discussion as to whether these tumors are made up of melanotic pigmented cells that originate in the epidermis and pass into the dermis and deeper tissues, or whether they are mesoblastic cells that have acquired the ability to form melanin (Ribbert's chromatophoroma), for it is generally agreed that mesoblastic cells readily take up pigment by phagocytosis. Ewing puts this phase of the subject somewhat tersely by saying: "The theoretical considerations favor the origin of all melanomas from the mesoblastic chromatophores, while the histology of human tumors favors the origin from epithelial cells which have taken on pigmentary functions." The group of melanomas that have apparently arisen from cells normally producing no pigment is of considerable interest, and it seems worth while, therefore, to report one that was recently observed in the pathologic service of the New Haven Hospital.

### REPORT OF CASE

S. G., a white woman, aged 69, was admitted to the New Haven Hospital, Aug. 7, 1922, when a supravaginal hysterectomy was performed for uterine myomas. The recovery was uneventful, and pelvic examination at the end of September revealed no abnormalities. About seven months later, April 24, 1923, she returned to the hospital complaining of a lump in the left groin, which had gradually grown in size, and of hemorrhoids. Examination showed nodular masses in both groins, but especially in the left, and a diffuse induration of the surrounding tissues. A hard polypoid mass projected from the rectum; it was removed with the cautery. Microscopic examination of the tissue removed showed it to be a malignant new growth, which was diagnosed as carcinoma. The patient left the hospital, but was given irradiation treatments with roentgen rays. There was no apparent benefit derived from this treatment. In fact, the disease was progressive, and the patient was readmitted, December 23. At this time, she was semiconscious, extremely anemic, and markedly emaciated. The clinical diagnosis was general carcinomatosis.

At necropsy, the pelvic cavity was massively invaded by a tumor that had extended to the retroperitoneal lymph nodes

* From the Brady Laboratory of Pathology and Bacteriology, Yale University School of Medicine.

1. Winternitz, M. C.: Bull. Johns Hopkins Hosp. **22**: 314, 1909.

and had metastasized to many viscera, as well as to the skin, cranial bones and vertebrae. Attention was attracted to the tumor nodules in the spleen. Since this organ is rarely, if ever, the seat of carcinoma metastases, the slight discoloration of a few of the tumor nodules indicated the possibility of the growth being a melanoma. It is of interest to note that the rectal mucosa was smooth and everywhere intact, and the anal sphincter, aside from some puckering of the orifice resulting from the previous removal of the tumor with the cautery, showed nothing abnormal.

Microscopically, the tumor cells varied in the different organs. In some organs they exhibited a compact structure of spindle shaped cells rich in pigment, while in others the tumor nodules were made up of round, oval or polyhedral cells in alveolar arrangement, with varying amounts of pigment which failed to give a positive Pearl's reaction. Reexamination of the polypoid tumor removed from the rectum showed it to be made up of round or polyhedral cells with a pseudo-alveolar arrangement, and the individual cells contained dark brown pigment granules similar to those seen in the metastases. The pigmentation, however, was so inconspicuous that it had escaped the attention of the original examiner. The final anatomic diagnosis was obviously, therefore, melanoma of the rectum with massive invasion of the pelvic tissues, metastases to the lungs, heart, spleen, stomach, liver, pancreas, suprarenals, kidneys, lymph glands, skin, bones, thyroid and dura.

### COMMENT

In 1847, Virchow[2] recognized two types of melanoma, carcinomatous and sarcomatous forms, the former characterized by the alveolar arrangement of its cells, the latter by its compact spindle-shaped structure. At the same time, he called attention to the fact that while some of the tumors are deeply pigmented, others may contain so little pigment as to escape the attention of even the most expert microscopists, and the same tumor may contain extremely variable amounts of pigment in its metastases to the different organs. He also reported several instances of intestinal melanomas, occurring almost exclusively in the rectum. Since then there have been numerous instances of this condition reported by Tuffier, Wiener, Cholier and Bonnett, and Churchman. Cholier and Bonnett[3] emphasized the close similarity of their case of rectal melanoma to epidermoid carcinoma, which was the original diagnosis made in the instance here reported. Churchman,[4] in 1918, collected reports of all the cases of this condition recorded in the literature up to that time, sixty-eight, and search for additional instances has been fruitless. Churchman agreed with Cholier and Bonnett in believing that rectal melanomas are skin tumors rather than of mucosal origin, and he emphasized certain features of this type of tumor, namely, the low position in the rectum, the pedunculated character, the absence of reduction of the caliber of the rectum, and the presence of inguinal adenopathy. He laid particular stress on the fact that a bilateral inguinal adenopathy, associated with a rectal neoplasm, so frequently means melanoma that it should always be suspected, and further metastases if sought for will be found in 80 per cent. of the cases, thus frequently avoiding possible unnecessary operative measures.

Another feature of interest in the instance here reported is the extensive involvement of the cranial bones and dura without invasion of the brain substance either grossly or microscopically, for it is generally recognized that next to chorio-epithelioma and hypernephromas, melanomas form the commonest source of metastases to the brain.

Even at the time of necropsy, it could hardly be said with certainty that the tumor was a melanoma, since most of the nodules were white, only an occasional metastasis having a grayish appearance; but the involvement of the spleen made one believe that the condition dealt with was not a carcinoma, which metastasizes very infrequently to the spleen; in fact, with such extreme rarity that some authorities even question whether a true instance of a metastasis of a carcinoma to the spleen has ever been observed. Ewing[5] states that "there is as yet no evidence that any one parenchymatous organ is more adapted than others to the growth of embolic tumor cells. The spleen, however, seems to escape with peculiar frequency."

2. Virchow, Rudolf: Virchows Arch. f. path. Anat. **1**: 470, 1847; **16**: 180, 1859.

3. Cholier and Bonnett: Rev. de chir. **46**: 914, 1912; **47**: 64, 235, 372, 563, 1913.

4. Churchman, J. W.: Am. J. M. Sc. **155**: 639 (May) 1918.

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## SHOE DYE POISONING*

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During the last two years, my attention has been called to ten cases of poisoning from the use of shoe dyes which contain either nitrobenzene or anilin as a solvent and which are used to dye tan or light colored leather black. These cases have been characterized by marked cyanosis, sometimes accompanied by vertigo and weakness, digestive disorders, headache and somnolence.

The danger of poisoning from nitrobenzene or anilin has been discussed particularly with regard to industrial workers. This phase of nitrobenzene and anilin intoxication is perhaps best summarized by Hamilton,[1] who made a thorough investigation of such poisoning in the American dye industry. Many cases of accidental poisoning by nitrobenzene or anilin through the spilling or splashing of these liquids on the skin or clothing are recorded in the medical literature. Painters using anilin-containing paint have been poisoned by the absorption of this oil through the skin.[2] Hair dyes containing anilin or its derivative paraphenylendiamin have long been recognized as a menace to public health, and effort has been made to suppress the sale of cosmetic products containing them.[3]

A remarkable source of nitrobenzene and anilin poisoning in infants has been observed on several occasions. It was found that when laundry inks containing nitrobenzene or anilin were used to mark diapers, the children often became cyanotic.[4] The foregoing cita-

5. Ewing, James: Neoplastic Diseases, Philadelphia, W. B. Saunders Company, 1922, pp. 85, 86, 872.

* From the Department of Pharmacology and Toxicology, University of Wisconsin Medical School.

1. Hamilton, A.: Industrial Poisoning in Making Coal Tar Dyes and Dye Intermediates, Bull. 280, Industrial Accident and Hygiene Series, Bureau of Labor Statistics, U. S. Dept. of Labor, 1919.

2. Birge, E. G.: A Probable Case of Anilin Poisoning, J. A. M. A. **62**: 314 (Jan. 24) 1914.

3. Berger, E.: Visual Disturbance Due to Use of a Hair Dye Containing Aniline, Arch. Ophth. **38**: 397 (July) 1909. Thompson, W. G.: Chronic Anilin Poisoning, M. Rec. **97**: 401 (March 6) 1920. A Poisonous Hair Dye, editorial, J. A. M. A. **53**: 803 (Sept. 4) 1909; Poisoning from Mrs. Potter's Walnut Juice Hair Stain, ibid. **53**: 809 (Sept. 4) 1909; A Toxic Hair Dye and Its Analysis, ibid. **52**: 1121 (April 3) 1909; Hair Dye Poisoning, ibid. **52**: 1579 (May 15) 1909.

4. Winkel, F.: Ueber eine bisher nicht beschriebene endemisch aufgetretene Erkrankung Neugeborner, Deutsch. med. Wchnschr. **5**: 303, 319, 415, 431, 447 (June 14-Aug. 30) 1879. Rayner, W.: Cyanosis in Newly Born Children Caused by Aniline Marking Ink, Brit. M. J. **1**: 294 (Feb. 13) 1886. Ewer, H.: Ungewöhnliche Ursache gehäufter Fälle von Nitrobenzolvergiftung bei Säuglingen, Deutsch. med. Wchnschr. **46**: 1078 (Sept. 23) 1920. Thomsen: Nitrobenzolvergiftung bei Säuglingen, München. med. Wchnschr. **68**: 399 (April 1) 1921. Neuland, W.: Ueber Vergiftungen von Säuglingen und Kindern durch methämoglobinbildende Substanzen (Anilin, Naphthalin usw.), Med. Klin. **17**: 903 (July 24) 1921. Nitrobenzene Poisoning, Methemoglobinemia and Winckel's Disease, editorial, J. A. M. A. **77**: 1108 (Oct. 1) 1921.

tions are sufficient to show the importance of poisoning by nitrobenzene and anilin when absorbed through the skin.

Nitrobenzene or anilin poisoning arising from the use of shoe dyes is generally thought to be quite rare. However, on searching the medical literature, one is immediately impressed by the number of cases on record as well as their wide chronological and geographic distribution. The earliest record of such a case of poisoning dates back to 1900, and cases have been observed in various European countries as well as in the United States. Another interesting observation is the fact that as early as 1902, the French recognized these dyes as a serious menace to health, and the Comité d'hygiène publique de France issued a warning against them.[5] In 1915, there were several cases of shoe dye poisoning in the Netherlands, with the result that the Amsterdam municipal health service confiscated the supply of shoe dye containing anilin that were in the possession of the dealers, and issued a warning against their further use.[6]

I have found a total of forty-seven cases of poisoning from shoe dyes reported in the literature. Of these, twenty-five resulted from dyes containing nitrobenzene, and twenty-one from dyes containing anilin. The toxic substance responsible for one case was not stated. One of the cases of nitrobenzene poisoning resulted fatally. Another case, which will be referred to later in this paper, also had a fatal outcome.

TABLE 1.—*Recorded Cases of Nitrobenzene or Anilin Poisoning from Shoe Dyes*

| Authority and Reference | Location | Cases of Nitrobenzene Poisoning | Cases of Anilin Poisoning | Toxic Agent Undetermined |
|---|---|---|---|---|
| Landouzy, L., and Brouardel, G.: Bull. de l'Acad. de méd. **44:** 114 (July 17) 1900 | France ..... | .. | 10 | .. |
| Stone, W. J.: J. A. M. A. **43:** 977 (Oct. 1) 1904 | U. S. (Ohio).. | 1(fatal) | .. | .. |
| Mongour, C.: Gaz. hebd. d. sc. méd. de Bordeaux **29:** 609 (Dec. 20) 1908 | France ..... | .. | 1 | .. |
| White, R. P.: Lancet **1:** 349, 1909 | England ..... | .. | 1 | .. |
| Adam, S. S.: Tr. Assn. Am. Phys. **27:** 503, 1912 | U. S. ..... | 1 | .. | .. |
| Van der Heide, C. C.: Nederl. Tidschr. v. Geneesk. **2:** 313, 1912 | Netherlands ... | .. | 1 | .. |
| Bettink, H. W.: Pharm. Weekbl. **49:** 757, 1913 | Netherlands ... | .. | 1 | .. |
| Creyx: Jour. de méd. de Bordeaux **43:** 495(Aug. 3) 1913 | France ..... | .. | 3 | .. |
| De Hartogh, J., Jr.: Nederl. Tijdschr. v. Geneesk. **2:** 503, 1915 | Netherlands ... | .. | 1 | .. |
| Ketner, C. H.: Chem. Weekbl. **14:** 148, 1917 | Netherlands ... | .. | 2 | .. |
| Japha, A.: München. med. Wchnschr. **64:** 1317 (Oct. 2) 1917 | Germany ..... | .. | 1 | .. |
| Stifel, R. E.: J. A. M. A. **72:** 395 (Feb. 8) 1919; ibid. **72:** 592 (Feb. 22) 1919 | U. S. (S. C.).. | 17 | .. | .. |
| Sanders, F. G.: J. A. M. A. **74:**1518 (May 29) 1920 | U. S. ..... | 1 | .. | .. |
| Neuhoff, F.: J. Missouri M. A. **18:** 53 (Feb.) 1921 | U. S. (Mo.)... | 1 | .. | .. |
| Cloud, R. E.: J. A. M. A. **78:** 280 (Jan. 28) 1922 | U. S. ..... | 1 | .. | .. |
| Rodda, F. C.: Minnesota Med. J. **6:** 544 (Sept.) 1923 | U. S. (Minn.). | 3 | .. | .. |
| Reynolds, H. I.: Georgia M. A. J. **13:** 348 (Aug.) 1924 | U. S. (Ga.).... | .. | .. | 1 |
| Total recorded cases (47)..... | | 25 | 21 | 1 |

Among the first cases reported are those of Landouzy,[7] who cites ten instances in which anilin poisoning followed the use of black shoe dyes. Stone[8] gives the clinical history and necropsy data in a case of fatal nitrobenzene poisoning from black shoe dye. In this case, a young man had purchased a pair of shoes in which the uppers were of a light color. He dyed them with a black dye containing nitrobenzene and wore them to a dance shortly afterward. Deep cyanosis, vomiting, coma and death followed. A remarkable outbreak of shoe dye poisoning at an army cantonment is reported by Stifel,[9] in 1919. He cited seventeen cases of nitrobenzene poisoning resulting from the practice of soldiers having their shoes dyed brown in order in match the color of their puttees. Numerous other cases of both nitrobenzene and anilin poisoning from the use of shoe dyes are cited in the literature. These are in the general summary given in Table 1, and are grouped according to location in Table 2.

It will be noted that all the reported cases of anilin poisoning from shoe dyes are from European sources, while all those of nitrobenzene poisoning are from the United States. The case reported by Reynolds as one of cyanosis due to shoe dye poisoning and referred to in Table 1 as of undetermined origin has been investigated through the courtesy of Dr. Reynolds, and anilin was found to be responsible.

The cases here reported, then, are the first of anilin poisoning from shoe dyes to be reported in the United States.

One finds numerous conflicting statements in the literature regarding nitrobenzene and anilin poisoning. For example, it has been maintained that pure anilin is entirely without toxic effect,[10] and that the toxicity of crude anilin is due to impurities of an unknown character. It has likewise been stated that nitrobenzene is not the true toxic principle of shoe dyes containing it, but that the toxic agent is some such impurity as tetranitromethane.[11] Others have maintained that the toxic constituent of shoe dyes is anilin and not nitrobenzene.[12] It is now definitely known that nitrobenzene and anilin when perfectly pure or both toxic and are absorbed through the intact skin. Hamilton[1] states that nitrobenzene is a more serious poison than anilin. Cyanosis

TABLE 2.—*Recorded Cases of Nitrobenzene or Anilin Poisoning from Shoe Dyes*

| Nation | Cases of Nitrobenzene Poisoning | Cases of Anilin Poisoning | Toxic Agent Undetermined |
|---|---|---|---|
| United States ..... | 25 | 0 | 1 |
| France ..... | 0 | 14 | 0 |
| Netherlands ..... | 0 | 5 | 0 |
| England ..... | 0 | 1 | 0 |
| Germany ..... | 0 | 1 | 0 |
| Total ..... | 25 | 21 | 1 |

5. Mongour, C.: Empoisonnement par des chaussures tientes au noir d'aniline, Gaz. hebd. d. sc. méd. de Bordeaux **29:** 609 (Dec. 20) 1908.
6. Ketner, C. H.: Mededeelingen op Chemisch-Hygienisch Gebied, Chem. Weekbl. **14:** 148, 1917.
7. Landouzy, L., and Brouardel, G.: Empoisonnements non professionels par l'aniline; étude clinique et experimentale; accidents survenus a dix enfants chaussés de bottines de cuir jaune noirci avec une teinture à base d'aniline, Bull de l'Acad. de méd. **44:** 114 (July 17) 1900.
8. Stone, W. J.: Fatal Poisoning Due to Skin Absorption of Liquid Shoe Blacking, with Autopsy Report, J. A. M. A. **43:** 977 (Oct. 1) 1904.
9. Stifel, R. E.: Methemoglobinemia Due to Poisoning by Shoe Dye: Report of a Series of Cases at an Army Camp, J. A. M. A. **72:** 395 (Feb. 8) 1919; Report of a Case of Cyanosis at Camp Jackson, S. C., Due to Poisoning from Shoe Dye, ibid. **72:** 592 (Feb. 22) 1919.
10. Abramovitch, E.: Sur un nouveau traitement de la tuberculose pulmonaire par l'huile d'aniline blanche redistillée et ses derives, Thesis, Montpellier, 1901.
11. Miner, C. S.: Methemoglobinemia Due to Poisoning by Shoe Dye, J. A. M. A. **72:** 593 (Feb. 22) 1919.
12. Hudson, W. G.: Anilin, Rather than Nitrobenzene, as the Poison in Shoe Dye, J. A. M. A. **72:** 747 (March 5) 1919.

from the latter compound is deeper but is not followed by the severe prostration characteristic of the nitro derivative.

There also seems to be some difference of opinion as to the relative toxicity of anilin and its salts. Fraser and Davies [13] hold the opinion that while free anilin is a powerful poison, its sulphate is without action. White [14] takes the opposite stand, that anilin salts are more toxic than free anilin. It has been definitely shown by careful physicochemical measurements that anilin salts in solutions are largely dissociated into anilin and the free acid,[15] so that, so far as their pharmacologic action is concerned after they enter the blood stream, there should be no difference between anilin and its salts.

Animal experimentation on the pharmacologic action of anilin has been conducted in this laboratory. When 0.1 gm. of anilin per kilogram of body weight is injected intravenously in the dog, death results in a few minutes as a result of cardiac failure. Electrocardiographic studies have shown that anilin attacks the specialized conducting tissues of the heart and gives rise to heart block and arrhythmias. In no case was methemoglobin found in the blood as a result of anilin poisoning. There was no difference in the action of pure anilin or its salts.[16]

The point has been raised that possibly the pigment is the toxic material in the shoe dyes. This is quite definitely excluded by the observations of Gautrelet [17] on the toxicity of anilin colors. Nigrosin, or anilin black, was found to be toxic to rabbits only in doses of 0.75 gm. per kilogram. This would correspond to 45 gm. for a man. Substances of this type are not absorbable through the skin, while many substances having the physical properties (solubility, vapor pressure, etc.) of nitrobenzene and anilin are readily absorbable through the intact skin. Many cases of shoe dye poisoning have been observed in which the feet of the victim were not discolored by the dye, indicating that the pigment had not reached the skin, although the solvent had been absorbed in quantities sufficient to cause marked cyanosis and the other symptoms of intoxication.

## REPORT OF CASES

CASE 1.—D. P., a girl, aged 6 years, put on a pair of shoes that had been dyed about an hour before. After she had worn the shoes for an hour, a slight cyanosis of the lips and finger nails was noted. After one and a half hours, the girl became sleepy and had to be aroused repeatedly. After three hours, she complained of a headache, and five and a half hours after putting on the shoes, a physician was called. The only symptom which he noted was the marked cyanosis. The respiration and pulse were slightly rapid and full. The temperature was normal. The patient was given eliminative treatment consisting of a laxative and abundant water and placed near an open window. Within an hour, the cyanosis was definitely decreased, and eight hours later, it had entirely disappeared. No bad after-affects were noted. The dye used in coloring the shoes was found to contain anilin.[18]

CASE 2.—B. M. B., a man, aged 40, weighing 165 pounds (75 kg.) and employed as a barber, took his shoes to a repair shop one afternoon to be dyed. He put them on about 5 o'clock the same evening and at 6:30 ate a good supper and felt normal. About 8 o'clock in the evening, while out for an automobile ride, his wife noticed the purple color of his lips and gums. This was called to his attention, but he insisted that he felt all right. After driving for about fifteen minutes longer, he began to feel weak. By 8:30 he was very blue, and on returning home at 9 o'clock, his wife was greatly alarmed and called a physician and a priest. At this time, the patient was very weak and "purple as a grape." The physician was unable to make a diagnosis, and the patient was taken to a hospital and put to bed. At 6 o'clock the following morning, he was still very purple and weak. The cyanosis began to clear about noon, and he was discharged from the hospital after two days. He was in bed for a week after being taken home, and complained of difficulty in breathing. He stated that he did not completely regain his health for three months. The dye used in this case contained anilin as the solvent and vehicle.

CASE 3.—W. E., a student, aged 28, weighing 140 pounds (63.5 kg.), took his shoes to a shoe store to be dyed. The shoes were delivered two days later at 2:30 in the afternoon and were put on immediately. He showed symptoms of cyanosis within an hour, and by 6:30 his entire body was blue. A physician was called, who examined him for abnormalities of blood pressure, heart and pulse rate, but found nothing abnormal. He was unable to make a diagnosis. On his physician's advice he went to a hospital and went to bed at 7 o'clock. The shoes were worn continuously up to this time. By this time the patient was intensely cyanotic and quite frightened. Immediately after going to bed, he received oxygen inhalations for half an hour and digitalis intravenouly. This treatment did not have any effect on the cyanosis. The blueness began to clear about 9:30 that night; by midnight, there was a marked clearing, and by 10:30 the following morning, it had completely disappeared. He left the hospital at noon on the day following the poisoning. The blood count, hemoglobin and urine examinations were entirely negative. The patient did not feel well for a few days, but no after-effects were noted. The dye used in coloring his shoes contained anilin.

CASE 4.—H. L., a robust, athletic student, aged 28, took his oxfords to a shoe repair shop, Thursday morning, to have them dyed. Friday, at 1:20 p. m., he called for them and put them on in the shop. He then went to work, and at 4 o'clock his companions noted his cyanotic color and began to tease him about being "blue." At this time, he still felt normal. He quit work at 4:30, and at 4:40 started to walk a distance of ten blocks to his home. He felt weak and found it necessary to walk slowly. At this time, he met an acquaintance who failed to recognize him on account of the cyanosis. He arrived home at 5:30, and at 5:50 undressed and went to bed. A physician was called at 6 p. m., and at 8 p. m. he was taken to a hospital. He had a chill which lasted for about one hour. The only symptoms were deep cyanosis, occipital headache, which was not of the throbbing type, the chill, and profuse perspiration. The physicians were at a loss to know the cause of the symptoms. The patient was repeatedly asked whether he had taken acetanilid or any "patent medicine." The physician then telephoned to Dr. A. S. Loevenhart of the Department of Pharmacology at the university for advice, and the correct diagnosis was made by telephone. He was given oxygen inhalations for twenty minutes without any effect on the cyanosis. Blood was taken from the median basilic vein and examined spectroscopically for methemoglobin, with negative results. The blood appeared to be extremely venous but did not become of arterial hue even after being shaken vigorously with air. The patient was discharged from the hospital the following Tuesday but did not feel normal for several weeks.

CASE 5.—M. M., a boy, aged 17, dyed his shoes black and put them on an hour later. After several hours, he became blue, dizzy and faint, and vomited after drinking milk. A physician was called, who noted the boy's cyanotic condition and ordered his shoes removed. The patient complained of a headache; his pulse rate was 110 and weak. The next day, he had a slight headache but seemed otherwise normal. The urine was examined every other day for six days but with negative results. The dye used is known to have contained anilin.[19]

13. Fraser and Davies: Poisoning by Aniline and by Nitrobenzene, M. Times & Gaz., March 8, 1862, p. 239.
14. White, R. P.: Poisoning from Aniline Black on Shoes, Lancet **1**:349, 1909.
15. Bredig, G.: Ueber die Affinitätsgrössen der Basen, Ztschr. f. physik. Chem. **13**:322 (Feb. 20) 1894.
16. Young, A. G.: Experimental Studies of Acute Poisoning by Anilin and Anilin Derivatives, J. Pharmacol. & Exper. Therap. **25**:148 (March) 1925.
17. Gautrelet, J.: Contribution a l'étude de la toxicité de certaines couleurs d'aniline, Compt. rend. Soc. de biol. **62**:510 (March 5) 1907.
18. For the report of this case and a sample of the shoe dye used, I am indebted to Dr. H. Curtis Johnson, Madison, Wis.
19. For the clinical history of this case, I am indebted to Dr. C. B. Hatleberg, Chippewa Falls, Wis.

CASE 6.—H. H., a girl, aged 3½ years, wore shoes that had just been dyed with a black shoe dye. She became very weak and cyanotic; her pulse rate was 140 but her temperature, normal. The treatment consisted of rest in bed for several days, during which time the cyanosis disappeared and the pulse returned to normal. The dye used to color the shoes is known to have contained anilin.[20]

CASE 7.—R. F., a strong, athletic girl, aged 16, dyed her suede shoes black and soon became dizzy and cyanotic, and vomited. After she was put to bed, she had chills and complained of a headache. One hour after dressing the next morning, the symptoms recurred, her feet became sore, and bullae formed on the toes. The latter disappeared after an alcohol wash. She was nauseated and cyanotic all day. These slippers were not worn again for a week and no recurrence of the symptoms was noted. We do not know what shoe dye was responsible for this case.[21]

CASE 8.—Mrs. X., aged 30, put on a pair of tennis slippers, which had just been dyed black, and played indoor baseball for a half hour. She was seized with shortness of breath and weakness, and had to be removed to her home. With the exception of the deep cyanosis of the entire skin and all visible membranes of the body, the physical examination was negative. The temperature was normal and the pulse rate above 100. The patient was removed to a hospital. The feet, which showed evidence of black dye, were scrubbed, and oxygen inhalations administered. The urine was normal, as was also the blood count and hemoglobin. The skin was still dusky the following morning. The patient recovered rapidly and was allowed to return to her home. We do not know what shoe dye was used in this case.[22]

CASE 9.—A young man aged 20, dyed his shoes black, and wore them to a dance. The case resulted fatally, but exact data as to symptomatology and time of death are not available. Necropsy showed a condition of the liver resembling that of acute yellow atrophy.[23]

### COMMENT

It will be noted that the outstanding symptoms of poisoning exhibited in these cases are: marked cyanosis, weakness and vertigo followed by rapid pulse, headache, vomiting, somnolence and chills. Children seem to be exceptionally susceptible, and doubtless some individuals are very much more sensitive to nitrobenzene and anilin than others, just as in the case of acetanilid.

The insidious character of these cases of shoe dye poisoning cannot be overemphasized. The public is totally uninformed of the fact that toxic materials may be absorbed through the intact skin and produce serious poisoning without causing any local manifestation. The person wearing the shoes is always ignorant of the fact that he is being poisoned by them and usually has to be told of the first sign of the intoxication—the cyanosis. After the symptoms develop to the point at which they are extremely evident, he becomes panic-stricken at the unusual blueness accompanied by weakness, dizziness, and often headache and vomiting. The patient usually considers himself very ill. And all this time he is entirely ignorant of the fact that the cause of his illness is the newly dyed shoes, which often are still being worn and causing further intoxication. Even the attending physician often fails to recognize the source of the poison and administers treatment while the patient is still wearing the shoes.

There is little doubt that the cases of shoe dye poisoning recorded in the medical literature are only a very small fraction of the actual cases of intoxication from this source. Probably in a very large number of cases, the patient is sent to bed and his shoes are removed incidentally. After the further absorption of the poison has thus been unwittingly stopped, the cyanosis gradually clears, the patient recovers, and the unexplained disease is forgotten.

### TREATMENT

The only treatment required is the removal of the shoes and rest in bed until the cyanosis disappears. Oxygen inhalation is without effect on the cyanosis. Digitalis medication is without avail and is not indicated.

### PREVENTION

The only way to prevent this type of poisoning is by making the use of these toxic solvents in dyes illegal through either state or national legislation. Attention of the state and national health authorities has been called to this matter. It is my belief that these toxic products could readily be replaced by materials that would not do bodily damage.

### COMPOSITION OF BLACK SHOE DYES

All the black shoe dyes which were sufficiently concentrated to enable one to dye tan shoes and which I have been able to obtain for the purpose of making a chemical analysis have been found to contain either nitrobenzene or anilin as solvents. Very dilute dyes such as will suffice for use on suede leather often contain alcohol as a solvent, but these preparations are of no value in dyeing ordinary leather shoes. The black dyes that are suitable for general use consist of a pigment such as anilin black or alcohol-soluble nigrosin, dissolved in an alcoholic solution of either nitrobenzene or anilin. The chemical composition of four such preparations which I have analyzed is given in Table 3.

TABLE 3.—*Composition of Black Shoe Dyes*

| Product | A Per Cent. | B Per Cent. | C Per Cent. | D Per Cent. |
|---|---|---|---|---|
| Dyestuff (anilin black) | 7.04 | 4.57 | 3.73 | 8.0 |
| Ethyl alcohol | 43.50 | 55.85 | 52.95 | 71.0 |
| Anilin | 41.43 | ..... | ..... | ..... |
| Nitrobenzene | ..... | 25.11 | 38.68 | 11.40 |

Preparation A is the one responsible for the case cited by Reynolds and also for Cases 1, 2, 3, 5 and 6 of the series reported in this paper. However, it is probably just as toxic as the preparations that contain smaller quantities of nitrobenzene. Manufacturers prefer to use nitrobenzene as a solvent because of the fact that it costs only half as much as anilin. The extremely pungent and nauseating odor of nitrobenzene is offensive, and dyes containing it are objectionable to many persons for this reason. The shoe dyes containing anilin are relatively inoffensive in odor and for this reason are even more insidious, though less toxic, than the preparations containing nitrobenzene. The public should be informed that the odorless dye is also quite toxic.

Of the four preparations analyzed, A was the only one that bore a warning label on the bottle or carton. It carried the notice printed in small type: "Caution: Shoes should never be dyed on a person's feet. Allow shoes to stand twenty-four hours before wearing." If this warning notice were rigorously observed, many of the cases of poisoning would doubtless be prevented. Warning notices are by no means effective in preventing

20. Communicated by Dr. J. E. Donnell, Cuba City, Wis.
21. Communicated by Dr. F. P. Foley, Dorechester, Wis.
22. Communicated through the courtesy of Drs. E. J. Gordon and J. M. Dunn of Columbus, Ohio.
23. For the information regarding this fatal case, I am indebted to Dr. H. Gideon Wells, University of Chicago.

poisoning. Apparently the operators of shoe shining and repair shops, who are mostly foreigners, either cannot read English, do not notice the insignificant warning, or totally ignore it. The keen commercial competition between such shops is also a factor. If one shop refuses to make quick delivery of dyed shoes, while a competitor is willing to dye them "while you wait," the latter operator is at an advantage. For these reasons, protection of the public through the use of warning labels is entirely inadequate. The only effective way to prevent repeated poisoning by these toxic dyes is to prevent their sale by means of legislative enactment.

It should not be a difficult matter to find solvents to replace nitrobenzene and anilin which would be nontoxic. The formulas for several such preparations have been furnished us by the National Anilin and Chemical Company. Whether or not the formulas will give dyes that are satisfactory is a matter of experiment. Certainly, it should not require an extensive chemical research to find a suitable nontoxic material that would be commercially available and also an excellent solvent for the pigment.

### CONCLUSIONS

1. A survey of the medical literature indicates that nitrobenzene or anilin poisoning resulting from the use of shoe dyes is a common occurrence. Reports of forty-seven cases previously published from Europe and the United States during the last twenty years have been collected.

2. Nine new cases of shoe dye poisoning are here reported. Six of these cases are known to have resulted from the use of a shoe dye that contained anilin instead of nitrobenzene as the solvent. These are the first cases of anilin poisoning from shoe dye to be reported in the United States.

3. The chemical analyses of four commercial preparations of black shoe dye are given. All these were found to contain either nitrobenzene or anilin.

4. The most important symptom is cyanosis without apparent cause occurring in a previously normal person. Other less constant symptoms are vertigo, headache, weakness and nausea.

5. Shoes should be removed and the patient kept warm in bed until the cyanosis clears. Oxygen inhalation is without effect on the cyanosis.

6. The only way that this type of poisoning can be adequately prevented is by state or national health regulations prohibiting the manufacture and sale of toxic shoe dyes. It is recommended that nitrobenzene and anilin be replaced by nontoxic solvents in order to eliminate the danger of poisoning.

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**Osler's Famous Challenge to Antivaccinationists.**—The late Dr. William Osler issued to antivaccinationists of England a challenge that was never accepted. He said: "Some months ago I was twitted by the editor of the *Journal of the Anti-Vaccination League* for a 'curious silence' on this subject. I would like to issue a Mount Carmel-like challenge to any ten unvaccinated priests of Baal. I will go into the next severe epidemic with ten selected vaccinated persons and ten selected unvaccinated persons—I should prefer to choose for the latter three members of parliament, three antivaccination doctors (if they could be found) and four antivaccination propagandists. And I make this promise—neither to jeer nor gibe when they catch the disease, but to look after them as brothers, and for four or five who are certain to die, I will try to arrange funerals with all the pomp and ceremony of an antivaccination demonstration."

# PUERPERAL FEVER

## STREPTOCOCCUS HEMOLYTICUS TOXIN *

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AND
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In 1878 Pasteur [1] cultivated the streptococcus from a case of puerperal infection. Since then it has been shown that *Streptococcus hemolyticus* is the cause of the majority of the fatal puerperal infections. Richet and Héricourt,[2] as early as 1888, suggested the producing of a serum or antibody to combat the staphylococcus infection. Marmorek,[3] in 1895, put this idea into practice as regards the streptococcus, and he produced a serum that was supposed to have been valuable in all types of streptococcus infection. But the results were discouraging, as the mortality in the patients treated with the serum was higher than in those without serum therapy. Then followed polyvalent serum therapy; the first was prepared by Van de Velde [4] in 1896. The work of Arohnson, Neufeld and Rimpau,[5] and Meyer and Ruppeld indicated the necessity of obtaining the strains from various sources of infection in man and of a polyvalent product because of the difference in virulence. In 1911, Weaver and Tunnicliff [6] found evidence of value in four out of five samples of polyvalent serum, as they raised the opsonic power against virulent streptococci injected into guinea-pigs. But the value of polyvalent serum in puerperal septicemia has not been generally accepted.

The discovery of the toxin of the hemolytic streptococcus of scarlet fever by the Dicks [7] has given impetus to the search for the toxin of the hemolytic streptococcus of puerperal septicemia, which toxin has never been isolated.

The strains of hemolytic streptococci were isolated from patients who had the clinical course of acute puerperal endometritis and septicemia. The organisms were present in the uterine cavity and blood. Strain A was obtained on culture from the blood of a patient who developed the puerperal septicemia after a difficult version and extraction. In this patient, an acute arthritis of the left elbow and an abscess in the right buttock occurred, from which foci *Streptococcus hemolyticus* was recovered. This patient recovered. Strains B and C were obtained from the blood of two patients who died as a result of puerperal septicemia. The uterine cavities yielded *Streptococcus hemolyticus*. The three strains were similar morhologically, culturally and in their biochemical reactions; mannite was unchanged.

The organisms were cultured in plain broth with 1 per cent. sheep's blood for four days. The cultures were filtered through sterile filter paper and the filtrates passed through the Berkefeld V filter. These filtrates were kept in the icebox while their sterility was tested.

The demonstration of toxin in these filtrates was thought possible if inflammatory reactions were produced by it on intracutaneous injections. The various

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* From the Departments of Bacteriology and of Gynecology of the University of Illinois and Cook County Hospital.

1. Pasteur: Septicémie puerperale, Bull. de l'Acad. de méd., 1879, pp. 260-271, quoted from Williams: Obstetrics, 1919.
2. Richet and Héricourt, quoted by Bailey, Am. J. Obst. & Gynec. **7**: 658 (June) 1924.
3. Marmorek: Ann. de l'Inst. Pasteur **9**: 593, 1895, quoted from Williams: Obstetrics, 1919.
4. Van de Velde and Peham: Arch. f. Gynäk. **23**: 1, 1904.
5. Neufeld and Rimpau: Ztschr. f. Hyg., 1905, p. 283.
6. Weaver and Tunnicliff: J. Infect. Dis. **9**: 129, 1911.
7. Dick, G. F., and Dick, G. H.: Skin Test for Susceptibility to Scarlet Fever, J. A. M. A. **82**: 265 (Jan. 26) 1924.

dilutions used were 1:10, 1:100 and 1:1,000, and the amount was 0.1 c.c. injected intracutaneously into the anterior surface of the forearm. A control of culture mediums was used. The reactions in the early cases were observed during the first twelve hours, while later they were observed at the end of twenty-four hours. The classification of the reaction was made according to that described by the Dicks.

The skin tests were performed on 203 women. In thirty-one pregnant women at term, the control injection produced no reaction, and the undiluted filtrate (Strain A) produced a positive reaction in twelve hours. A strong positive reaction developed in twenty-four hours, the area of inflammatory reaction being from 6 to 7 cm. in diameter, red, swollen, tender and with raised margins. The height of the reaction persisted for thirty-six hours, and recession of the reaction could be observed after forty-eight hours. With the undiluted filtrate of Strain B, six positive reactions and three slightly positive reactions occurred in eighteen pregnant women. The undiluted filtrate of Strain C produced positive reactions at the end of twenty-four hours in eight pregnant women at term. The three filtrates showed a difference in degree of reaction, although the undiluted filtrates produced reactions in almost all the pregnant women injected.

Higher dilutions were used to determine whether there would be a difference of reaction in different persons. When we used 0.1 c.c. of the 1:10 dilution, forty-six pregnant women in a series of sixty-eight developed slightly positive to positive reactions in twenty-four hours. Only twenty-six of a series of seventy-five pregnant women developed positive reactions after the injection of the 1:100 dilution; while sixteen pregnant women in a series of 102 showed slightly positive to positive reactions with the 1:1,000 dilution.

Of twenty nonpregnant women from the orthopedic ward, apparently free from infection, only two gave slightly positive tests with the 1:1,000 dilutions of Strain A filtrate.

The surprising results occurred in the normal puerperal women who were tested on the first to the fifth day post partum. In a series of twenty-five women, eighteen slightly positive to positive reactions occurred with the 1:10 dilution of Strain B filtrate; eleven slightly positive to positive reactions developed with the 1:100 dilution of Strain C filtrate.

In order to compare the infective puerperal women with the foregoing normal, a series of nineteen women having such puerperal infections as thrombophlebitis pelvic abscess, septic abortion and breast abscess, was tested. A slightly positive reaction developed in only two instances with the 1:100 dilution of Strain C filtrate, and in four instances with the 1:10 dilution of Strain B filtrate.

SUMMARY

The filtrate derived from the blood broth culture of the hemolytic streptococcus isolated from the blood of patients with puerperal septicemia produced inflammatory reactions, which began within from six to twelve hours after intracutaneous injection, and persisted for from thirty-six to forty-eight hours. The degree of reaction varied with the concentration of the filtrate, and the incidence varied with the concentration and the state of the patient. In nonpregnant women, infection free, 10 per cent. showed reaction; in pregnant women, 15 per cent. In the noninfective puerperal women, reactions occurred in 72 per cent. with Strain B and in 44 per cent. with Strain C, while in the septic puerperal women using the same dilutions as in the normal, reactions developed in 21 per cent. with the Strain B filtrate and in 10.5 per cent. with the Strain C filtrate.

CONCLUSIONS

The intracutaneous tests with the filtrate simulate those of toxin reactions.

There appears to be a relation between the tests and the puerperium when the patient's resistance or immunity is low toward infections. In the septic puerperal cases, the developing active immunity may explain the results.

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# TREATMENT OF GASTRIC ULCER BY THE METHOD OF DUODENAL ALIMENTATION

## PRECAUTIONS TO BE OBSERVED *

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Duodenal alimentation over an extended period of time may be employed principally for two purposes: first, as a form of feeding, when, because of some functional, organic, anatomic, mental, postoperative or other reason, food cannot be taken by mouth or stomach; and, secondly, as a form of therapy in gastric diseases, especially gastric or duodenal ulceration.

The present writing deals only with the second group of cases. Favorable results have been reported by Einhorn [1] and his followers with this apparently logical form of therapy. For those who employ this method, it may prove of value to observe several precautions, which became apparent to me in the course of experiments with the concomitant use of two duodenal tubes, one in the stomach and one in the duodenum.

By duodenal alimentation, an attempt is made to put the stomach at rest from its motor activity as well as from its secretory function. However, I have shown that duodenal alimentation alone does not eliminate the secretion of gastric juice, and consequently, gastric motor activity must get into play to remove this secretion. It was demonstrated that gastric secretion commences immediately during the process of duodenal feeding [2] and continues as long as the food contents remain in the duodenum.[3] This is especially true in patients with an irritative form of gastric disorder, which is the usual type in which an "ulcerative process" is likely to occur.[4]

In these persons, any form of stimulation will start gastric secretion. In one patient suffering from a duodenal ulcer associated with marked gastric hypersecretion and hyperacidity, while under duodenal tube treatment, simply seeing a plate of lamb chops given to the patient in the next bed brought forth 45 c.c. of pure gastric juice (free hydrochloric acid, 44, and total acid, 50), while smelling the food produced 70 c.c. (free hydrochloric acid, 50, and total acid, 60). In

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* From the Medical Service of Dr. Jacob Kaufmann, Lenox Hill Hospital.

* Read at the American Gastro-Enterological Association, Atlantic City, May 25, 1925.

1. Einhorn, Max: The Duodenal Tube, Philadelphia, W. B. Saunders Company, 1920.

2. Garbat, A. L.: Gastric Secretion in Response to Duodenal Feeding, Arch. Int. Med. **32**: 771 (Nov.) 1923.

3. Garbat, A. L.: Am. J. M. Sc. **169**: 687 (May) 1925.

4. The term "ulcerative process" has been proposed by Dr. Jacob Kaufmann to designate the physiologic disorder associated with gastroduodenal ulceration, as a differentiation from the structural change for which the term "ulcer" should be preserved.

another patient, discussion of a possible operation produced 45 c.c. of gastric secretion (free hydrochloric acid, 80, and total acid, 94). In both these cases, large amounts of gastric secretion were regularly stimulated during the duodenal alimentation. In the first patient, it was estimated that about 2,000 c.c. of gastric juice was secreted during the fourteen hour period of seven duodenal feedings, at two hours' interval.[3] It is evident, therefore, that such acid gastric secretion, unbound by any food in the stomach, can be highly irritant to the gastric mucosa, and readily productive of pylorospasm—just the very conditions we try to obviate by the duodenal feeding.

My present investigation by the two tube method has shown the benefit derived from antacids, or alkalis by mouth, used concomitantly with the duodenal feeding. The reason and necessity for their employment have not been sufficiently impressed. Contant alkalization of the stomach is just as essential an adjuvant during the duodenal intubation treatment of gastric ulcer as it is so well recognized to be in the many other forms

*Results of Experiments*

| Date | Hour of Gastric Aspiration | Interval After Duodenal Feeding Was Begun | Amount of Gastric Secretion Obtained | Free HCl | Total Acid | Antacid Powder* |
|---|---|---|---|---|---|---|
| Patient 1. | | | | | | |
| July 18 | 10:30 a.m. | 30 min. | 75 c.c. | 46 | 56 | None given |
| 18 | 4:00 p.m. | 30 min. | 15 c.c. | 0 | 10 | Powder given ½ hour before feeding |
| 19 | 9:45 a.m. | 30 min. | 17 c.c. | 56 | 60 | Powder given 15 min. after feeding |
| Patient 2. | | | | | | |
| July 21 | 3:45 p.m. | 30 min. | 50 c.c. | 80 | 94 | No powder given |
| 21 | 5:40 p.m. | 30 min. | 58 c.c. | 84 | 100 | No powder given |
| 21 | 7:40 p.m. | 30 min. | 50 c.c. | 40 | 54 | No powder given |
| 22 | 10:30 a.m. | 30 min. | 10 c.c. | 0 | 20 | Powder given 15 min. before feeding |
| 22 | 12:30 p.m. | 30 min. | 18 c.c. | 0 | 16 | Powder given 15 min. before feeding |
| 22 | 4:15 p.m. | 30 min. | 45 c.c. | 0 | 18 | Powder given right after feeding |
| 22 | 6:20 p.m. | 30 min. | 54 c.c. | 4 | 22 | Powder given right after feeding |

* The antacid mixture employed in these experiments consisted of from one-half to one teaspoonful of the following combination: sodium bicarbonate, 15; bismuth subnitrate, 15; magnesium oxid, 10.

of treatment without duodenal feeding. My experiments have shown that antacids or alkalis should be administered with every duodenal feeding. One may employ the combination of bismuth subnitrate, 2.0, magnesium oxid, 0.2, which Einhorn prescribes three times a day, or the Sippy [5] mixture (10 grains [0.65 gm.] each of magnesium oxid and sodium bicarbonate, alternating with a powder containing 10 grains [0.65 gm.] of bismuth subcarbonate and from 20 to 30 grains [1.3 to 2 gm.] of sodium bicarbonate, midway between feedings), or one of the mixtures employed by Dr. Kaufmann [6] (one-half teaspoonful of the following combination: sodium bicarbonate, 15; bismuth subnitrate, 15; magnesium oxid, 10).

Alkalis or antacids swallowed just before the duodenal feeding is started are much more efficient than when given after the feeding. Administered before, they may entirely prevent the cycle of gastric secretion, while if given after the feeding, they only neutralize the acidity of the gastric juice already secreted, but sometimes not even that. Some examples of such repeated experiments are presented in the table.

5. Sippy, B. W.: Gastric and Duodenal Ulcer, J. A. M. A. **64**: 1625 (May 15) 1915.

6. Kaufmann, Jacob: Diseases of the Stomach, in Forchheimer's Therapeusis of Internal Diseases, p. 96.

While it is recognized that cases of peptic ulcer have been described in which toxic symptoms of alkalosis were caused by the excessive administration of alkaline antacids,[7] such relatively infrequent occurrences should not be allowed to overbalance the advantages from gastric alkalization. Furthermore, this can be obviated by the use of neutral antacids.[8]

Another feature often observed by the two tube method was the reflow of part of the duodenal feeding into the stomach during the duodenal alimentation. This was found to be due to (1) too rapid injection of the food into the duodenum, (2) improper position of the duodenal tube, or (3) the condition of a patent pylorus. In order to overcome this, the duodenal feeding of from 7 to 8 ounces (200 to 225 gm.) should always be given very gently, and not in less time than from fifteen to twenty minutes. The Einhorn feeding apparatus is best adapted for this purpose.

We usually consider that the tube is properly placed in the duodenum if we can aspirate alkaline contents from it. However, in many instances, the two tube method has revealed that in spite of having obtained definite alkaline contents from the duodenal tube, a part of the milk-egg mixture which was later passed through it into the duodenum would be found in the stomach. When such is the case, one must let the duodenal tube pass farther along into the duodenum. Still, in some patients, even after this precaution had been taken, and the tube had been properly located by the roentgen ray, the feeding nevertheless repeatedly escaped into the stomach. Such regurgitation is probably due to a relaxed or patent pylorus, and was found not only in cases with a gastric secretion of high acid figures, but also in achylias. In one instance particularly, no matter how persistently I attempted to overcome this reflow by slow feeding, by changing the posture of the patient, or by permitting the tube to pass farther along, the two tube method nevertheless constantly showed milk-egg mixture in the stomach. In another patient, roentgen-ray examination showed an angular fixation of the duodenum due to adhesions, and unless the tip of the duodenal tube was beyond the angle of fixation, the feeding flowed downward by gravity back into the stomach. That the two tubes were not both in the one place was proved by the finding that the milk-egg aspirated from the duodenal tube was alkaline in reaction, while that aspirated from the stomach tube was acid. The roentgenograms showed the one tube properly situated in the third portion of the duodenum.

It may be surprising to those who employ duodenal alimentation to find how frequently the stomach will show part of the feeding. Its occurrence, however, is not illogical, even in cases without any of the foregoing disorders, when one realizes that the tube is manipulated almost every two hours for a period of days or weeks, only exceptionally by a physician, and not always by a nurse especially trained. Occasional tests by the additional duodenal tube in the stomach will help to prove this regurgitation. The persistent alkalization by mouth, as described above, will also help to minimize this drawback, if it should occur in spite of all precautions.

7. Hardt, L. L., and Rivers, A. B.: Toxic Manifestations Following Alkaline Treatment of Peptic Ulcer, Arch. Int. Med. **31**: 171 (Feb.) 1923.

8. Greenwald, I.: Proc. Soc. Exper. Biol. & Med., May, 1923. Kantor, J. L.: Antacid Gastric Therapy, J. A. M. A. **81**: 816 (Sept. 8) 1923. Shattuck, H. F.; Rohdenburg, E. L., and Booher, L. E.: Antacids in Management of Peptic Ulcer, J. A. M. A. **82**: 200 (Jan. 19) 1924.

### CONCLUSION

1. In the treatment of gastric or duodenal ulcer by means of prolonged duodenal alimentation, stress should not be laid entirely on the exclusion of food from the stomach. Great importance is attributed to the frequent and concomitant administration of antacids or alkalis by mouth before each duodenal feeding, in order to neutralize or prevent the gastric secretion which is almost regularly associated with the duodenal alimentation.

2. The two tube method has shown that a reflow of duodenal feeding into the stomach occurs more frequently than is usually believed; this occurs with improper position of the tube, which cannot always be recognized, or with a patent pylorus of the stomach. Antacid therapy will help to minimize the disadvantages resulting from such regurgitation.

113 East Eighty-First Street.

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## REDUCTION OF INCREASED INTRACRANIAL PRESSURE

### BY INTRAVENOUS ADMINISTRATION OF GLUCOSE AND HYPERTONIC RINGER'S SOLUTION *

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The old, empiric treatment for head injuries consisted of rest in bed, morphin and large doses of magnesium sulphate. The rationale of this not being evident, it was discarded in many clinics. However, experimental work by Weed and McKibben [1] demonstrated that cerebrospinal fluid pressure and brain volume were both reduced by the intravenous administration of hypertonic solutions of various salts and of glucose. Cushing and Foley [2] reported similar results through the ingestion of hypertonic solutions, and later Foley and Putnam [3] obtained like effects by intraintestinal administration. Clinical application of these experimental findings was reported by a number of workers, particularly by Cushing and Foley,[2] Sachs and Belcher,[4] Ebaugh and Stevenson,[5] Hughson [6] and Fay.[7] Thus was the empiric administration of magnesium sulphate for traumatic intracranial lesions confirmed and its use reestablished.

It has been shown that nearly identical results in the reduction of increased intracranial pressure can be obtained by the intravenous introduction of hypertonic solutions of sodium chlorid, Ringer's solution and glucose. The oral or rectal administration of hypertonic solutions of sodium chlorid or magnesium sulphate may be equally efficient in some cases, but the action is somewhat slower, and certain conditions contraindicate this method of pressure reduction. Fay [8] states that magnesium sulphate must never be given in the presence of shock as characterized by low temperature and rapid or rising pulse. But it is in just such cases that some means of rapidly lowering an increased intracranial pressure is indicated. Fay also points out that the fluid intake must be kept at the minimum, since the oral or rectal introduction of hypertonic solutions reduces intracranial pressure by dehydration of the entire system. It is evident that the severe loss of fluids, as by bleeding or continued vomiting, as well as the presence of a weak, rapid pulse, contraindicates dehydration.

Weed and McKibben [1] have shown that a very slight rise in intracranial pressure occurs during the intravenous injection of any solution, as a result of the simple increase in blood volume. As soon as the injection of a hypertonic solution is stopped the intracranial pressure declines, reaching the maximum reduction in from twenty-five to thirty-five minutes. The administration of hypertonic sodium chlorid or Ringer's solution is followed, after the slow return to normal, by a continued rise in pressure. No such subsequent elevation above normal was noted after the administration of glucose. Weed and Hughson [9] further demonstrated that the cerebrospinal fluid pressure is individual and relatively independent of changes in either arterial or venous pressure. Normally it is lower than the arterial and above the sagittal sinus pressure. The administration of hypertonic solutions intravenously reduces the cerebrospinal fluid pressure to zero or subzero levels. The sagittal venous pressure assumes a lower level than normal, and the brachial venous pressure may fall somewhat, but not as low as the sagittal, while the arterial pressure remains practically constant at the normal level. From the clinical standpoint it is evident that the reduction of increased intracranial pressure by the intravenous administration of hypertonic solutions need cause no fear of possible damage from lowering of the general arterial or venous pressures. The experimental work of Weed and McKibben [1] indicated a choice in the solutions to be used, Hypertonic sodium chlorid solutions were apparently toxic for some animals, while hypertonic Ringer's solution and hypertonic glucose solution gave no poisonous manifestations. The toxicity of the former is probably due to the upsetting of the salt balance in the blood serum. While we know of no case of sodium chlorid poisoning in man when the hypertonic solution was given for increased intracranial pressure, the possibility is always present, and Ringer's or glucose solution should be preferred.

Hypertonic glucose solution intravenously is particularly indicated in acute traumatic cases associated with increased intracranial tension, since it not only relieves the medullary embarrassment, but is of distinct value in shock. This was clearly demonstrated by the work of Erlanger and Woodyatt.[10] The report by Litchfield [11] on the therapeutic value of intravenous glucose solution confirms the earlier experimental work. Haden [12] successfully applied this therapeutic measure to reduce brain volume in cases of epidemic meningitis. Ebaugh and Stevenson,[5] in an experimental study of an

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epileptic patient with a decompressive craniectomy, showed that hypertonic glucose solution had a distinct advantage over hypertonic Ringer's solution for clinical use. The fall in intracranial pressure was more gradual and more prolonged after the administration of glucose solution, and no terminal rise was noted even after eight and three-fourths hours. Hypertonic Ringer's solution, on the other hand, had a maximum fall of one and three-fourths hours, followed by a rise to normal in three and a half hours. The pressure, however, continued to rise and continued above normal for more than two hours.

It is evident from the foregoing review that hypertonic solutions of sodium chlorid, Ringer's mixture and glucose solution will reduce intracranial pressure when administered intravenously. Sodium chlorid, sodium sulphate, magnesium sulphate and Ringer's mixture will yield similar results when given by mouth and by rectum. The effect of concentrated solution of glucose in the gastro-intestinal canal has not been definitely proved. Sodium chlorid is not recommended for intravenous use because of possible toxic effects, while Ringer's mixture has a shorter effective period compared to glucose, with the additional drawback of the terminal intracranial hypertension. Glucose has the further advantage of its therapeutic action in shock. Hypertonic magnesium sulphate solution is probably as satisfactory as any solution for oral or rectal administration.

The essential mechanism whereby increased intracranial tension, i. e., cerebrospinal fluid pressure and brain volume, is reduced by the administration of hypertonic solutions must be considered as osmotic pressure and rate of diffusibility. It has been shown by Weed and McKibben,[1] Weed,[13] Foley,[14] Wislocki and Putnam,[15] and Nanagas[16] that the cerebrospinal fluid, after the administration of hypertonic solutions, passes from the subarachnoid space through the perivascular channels and into the interfibrous spaces of the white matter and the pericellular spaces of the gray. From here it is taken up by the capillaries and has been traced into the smaller cerebral veins. It therefore differs from the normal mechanism of cerebrospinal fluid absorption.

At the University Hospital we have used hypertonic solutions of sodium chlorid and of magnesium sulphate for both oral and rectal administration. We prefer magnesium sulphate, as it is less of a local irritant. For intravenous use, hypertonic solution of sodium chlorid, 35 per cent. saturated Ringer's mixture, and 50 per cent. glucose solution have been used. Sodium chlorid was discarded because of the possible toxic effect. Since hypertonic Ringer's solution apparently acts more rapidly than hypertonic glucose solution, we have preferred this solution in cases of acute cerebral trauma without shock, requiring rapid decompression. For the same reason hypertonic Ringer's solution is used when necessary to reduce brain volume during the course of cranial operations. Here the visual evidence is very striking; a tense bulging dura will in a few minutes become relaxed and even show small folds, while a brain bulging even after the withdrawal of cerebrospinal fluid may be shrunken sufficiently to allow easy closure.

We prefer a hypertonic solution of glucose, usually 50 per cent., in traumatic cases associated with either shock or loss of blood, or in those cases requiring a less rapid reduction of intracranial pressure. In some cases of skull fracture with coma, the patient has completely aroused within a few minutes following the intravenous administration of 50 per cent. glucose solution. We think it advisable to give glucose after the introduction of Ringer's solution in those cases in which the terminal rise in pressure associated with the latter solution might be dangerous. We have also found hypertonic glucose solution of distinct benefit in postoperative increased intracranial pressure. Particularly is it useful when continued vomiting is associated with the other pressure symptoms. Here it not only relieves cerebral tension, but furnishes needed calories.

Recently a new application for the use of hypertonic glucose solution was suggested by the following case:

A school boy, aged 12, admitted to the University Hospital, Feb. 18, 1925, had been almost continually unwell during the past four years, having frequent headaches and vomiting. He had very severe pains over the entire head. He had vomited every day during the month previous to admission, and was generally nauseated. Some vomiting had been projectile in type. During the fall of 1924, the patient noticed that his eyesight was failing, and it grew progressively worse. Lately difficulty in arousing him had been noted. For the week before admission the patient had vomited practically everything taken, even liquids. At the time of admission he was crying because of excruciating pain in the head, in spite of which he was drowsy. He was confined to bed because of pain and the weakened condition due to lack of food. Ophthalmoscopic examination showed 7 diopters of swelling in the right eye and 8 diopters in the left. Neurologic examination in reference to localization of possible brain tumor was negative.

His general condition was such that we did not consider ventriculography a safe procedure, nor was he in a condition to withstand a simple subtemporal decompression to conserve vision. Because of his dehydration from vomiting, magnesium sulphate, either by mouth or by rectum, was contraindicated. He was therefore given 100 c.c. of a 25 per cent. solution of glucose intravenously. The following day 100 c.c. of a 50 per cent. solution of glucose was administered, and his headaches disappeared. He no longer felt nauseated, did not vomit and took some nourishment. On the two succeeding days he was given the same amount of glucose. His general condition was markedly improved. Respirations, which on admission had averaged between 15 and 18, rose to 20 and 22. The pulse rate on admission ran from 55 to 70. After the injections it ranged between 85 and 95. Headache, nausea and vomiting entirely disappeared. He was able to be out of bed. Ophthalmoscopic examination showed a reduction of the choked disks to a little less than 4 diopters on the left, and less than 5 on the right. Ventriculograms were then made, showing a bilateral hydrocephalus and apparently some obstruction to the outflow of cerebrospinal fluid from the fourth ventricle. At operation, a thin-walled cyst was found in the midline, pressing on the lower portion of the fourth ventricle. He has made a perfect recovery.

Intravenous hypertonic glucose solution in this patient not only relieved extremely severe headaches, nausea and vomiting, but also definitely reduced swelling of the optic nerve heads. The glucose furnished much needed calories and prevented possible acidosis. It changed the patient from a very poor to a reasonably good operative risk.

The intravenous introduction of all hypertonic solutions must be made slowly. Particularly is this true of

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16. Nanagas, J. C.: Experimental Studies on Hydrocephalus, Bull. Johns Hopkins Hosp. **32**: 381 (Dec.) 1921.

Ringer's solution. Saturated Ringer's solution should not be given faster than 3 c.c. per minute. Any sudden change in the pulse is a warning to stop the flow of solution for a moment, and further introduction must be at a slower rate. From 50 to 100 c.c. is usually sufficient. Hypertonic glucose (50 per cent.) is administered through a small needle by gravity. Usually 100 c.c. is adequate. We have on occasion given up to 200 c.c.

For oral administration, 3 ounces (90 c.c.) of 50 per cent. solution of magnesium sulphate has given excellent results. Six ounces (180 c.c.) of 50 per cent. magnesium sulphate is used for rectal administration.

### CONCLUSIONS

The slow reduction of increased intracranial pressure in the absence of shock, hemorrhage, vomiting or dehydration is satisfactorily accomplished by the oral or rectal administration of magnesium sulphate.

The rapid reduction of intercranial tension, in acute intercranial traumas unassociated with shock, is best accomplished by the intravenous administration of hypertonic Ringer's solution. Glucose may be given later to maintain the lowered intercranial pressure.

Hypertonic glucose solution administered intravenously is indicated when acute intracranial pressure is associated with shock or hemorrhage, and in the less acute cases when complicated by dehydration, nausea and vomiting. Glucose has the following advantages over any of the salt solutions: prolonged action, no terminal rise in pressure, nontoxicity, nondehydration, increased blood volume in shock, and the control of acidosis.

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## IVY POISONING

### PREVENTIVE TREATMENT, WITH ESPECIAL REFERENCE TO THE ELEMENT OF INDIVIDUAL SUSCEPTIBILITY *

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Every physician is aware of the extent to which ivy poisoning may at times proceed; in the severer cases the affliction may amount to more than a nuisance and interfere not only with the comfort of persons who enjoy the great outdoors, but also with the function of military bodies, boys' summer camps, and other institutions that are so closely related to it.

Local treatment is unsatisfactory, as indicated by the seven-page list of vaunted remedies in McNair's [1] recent monograph on "Ivy Dermatitis"; and this has led, conformable to the present-day immunity trend, to the development of preventive and curative systems involving both the intramuscular injection of an extract of the plant and the administration of its tincture by mouth.

Introduced by Schamberg [2] in 1919, and developed by Strickler [3] in 1921 and 1923, such favorable reports have subsequently been published by Alderson,[4] Bivings,[5] Williams,[6] and Williams and MacGregor [7] that on the face of it we were in possession of a new and valuable addition to our therapeutic armamentarium. Only Corson [8] appears to have expressed himself unfavorably. Since the nature of the affection was such as to lend itself to a ready check-up in an experimental way, and since, if valid, the immunity system might prove to be of value as a tool in the investigation of the general subject of immunity, we entered into the considerations and tests described below.

### GENERAL CONSIDERATIONS

When dealing with such a subject as therapeutic protection against disease, we cannot remain satisfied as to its efficacy until we have essayed the demonstration of immune bodies, or, this failing, find that the clinical evidence has become unequivocal. This must be the case particularly when the antigen concerned, as in ivy poisoning, is a nonprotein one. According to Strickler,[9] "Various immunologic studies have failed to disclose any immune substances in the blood serum of susceptible patients;" but we find no details as to the extent to which these searches were made. As it stands today, therefore, clinical judgment remains as the only criterion of results of treatment, and it becomes incumbent on us next to examine and analyze our clinical premises.

Doing this, we at once recognize that clinical judgment, in the common run of ivy poisoning cases, is especially handicapped because so many variables are concerned. In relation to the whole subject of ivy poisoning (not to individual persons) the variables may be arranged as follows:

1. *Susceptibility.*—This, a variable state, will be adjudged and graded according to (1) the patient's own ideas of discomfort, and (2) the observations of the physician. It need scarcely be pointed out wherein these are variable—the patients' versions of previous attacks and complaints of past ones will be registered largely according to their memory, general make-up, and nervous load. All are variable. From the standpoint of the physician, he is handicapped, because as a rule he does not see the attack through all its stages or even consistently. In addition, many patients have further complicated the situation by self-prescribed remedies which may just as well aggravate as benefit the attack.

2. *Severity of Different Attacks.*—This is yet a further variable, depending on the amount of friction accompanying the contact, the part of the plant concerned, etc. Attacks may be light or severe, long or short. We never know, *a priori,* whether the patient is destined for a flurry or a siege.

We have thus a summation of variables which must be met in the ordinary clinical approach to the whole problem of ivy dermatitis, including its course.[10] Not that this situation is peculiar to ivy dermatitis; the foregoing must have a familiar ring to the army of physicians that has encountered the same elements of uncertainty as they attempted to appraise the value of

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8. Corson, E. F.: The Value of the Toxin of Rhus Toxicodendron and Rhus Venenata, J. A. M. A. **81**: 59 (July 7) 1923.
9. Strickler (Footnote 3, second reference).
10. Deibert (Deibert, O.; Menger, E. F., and Wigglesworth, A. M.: J. Immunol. **8**: 287 [July] 1923) encountered the same situation in relation to specific hypersensitiveness against ivy poisoning in the part of the American Indian. Thus, it was the consensus of opinion of eleven physicians, as elicited by a questionnaire, that the Indian was less susceptible than the Caucasian. Deibert applied Rhus virus to the arms of 227 full blooded Indians and forty-six white persons. The percentage of takes, 56 and 58, was practically the same in the two groups.

different lines of treatment in a host of other diseases. But ivy dermatitis is one of the many which variables do complicate, and it is not overstating the case when we conclude that the reports as to the efficacy of treatment have been arrived at under difficult and treacherous circumstances.

### GENERAL PLAN OF EXPERIMENT

As against the foregoing situation, the ideal means would be to keep a group of patients under observation throughout the whole course of several attacks, and compare these both without and with treatment. This being impossible, the alternative, and the one which we have essayed, is the experimental induction of such attacks, preferably on both man and animals. If the latter could be accomplished, the possibilities of serum therapy might for the moment open up; but this can never loom large when one compares the formidableness of serum therapy and that of dermatitis venenata as ordinarily seen.

As human disease in general goes, ivy poisoning lends itself peculiarly well to inquiry in a precise, scientific manner, because it can be experimentally produced in miniature on human volunteers with no danger, a minimum of discomfort, and in full sight at all times. As applied to the treatment phase to which our problem was limited, the procedure involved (1) the determination of the general subject of susceptibility to ivy poisoning, that is, the first-hand foreknowledge of several volunteers' susceptibility, with proper recording; (2) the following of the course of uniformly induced successive attacks, and thereafter (3) a retest of susceptibility after a course of treatment of the prophylactic treatment as recommended. We have followed this course.

We would emphasize that our problem has been that of the preventive phase of ivy poisoning and not of the cure of the already established disease.

### METHODS

Altogether, we have used fresh bark from roots and twigs, as well as leaves, and also 95 per cent. alcoholic preparations of these. All were potent. We have always, however, when the element of comparison was involved, used the same preparation of virus. The most potent were alcoholic extracts made from fine shavings of the bark from twigs in winter, and from the leaves in summer. We have employed material from the same plant of *Rhus toxicodendron* in all our work.

### EXPERIMENTS ON ANIMALS

Much to our disappointment, none of the animals we tested developed reactions; this avenue of approach had to be abandoned, at least for the present. We quote details for the benefit of those who may have occasion to compare skin reactions in general in man and in animals. The technic was the same as that which will be described later in the human tests. Virus was applied to the ears of cats, dogs, monkeys, white mice, guinea-pigs, rabbits and white rats, and under the wings of chickens and pigeons. It was kept in contact with the skin for from one hour to twenty-four hours, and the site observed until after seven days. Irritating the skin by scraping and sandpapering before applying the virus, injecting it intradermally and subcutaneously, and applying it to mucous membranes (the anus) were equally fruitless.

These results were unexpected, after what we had read in the literature. Thus, McNair cited one case in which a rabbit was given the sap by mouth, causing death, and quoted White (1873) as stating that hunting dogs developed sore eyes from dermatitis venenata. McNair stated that species immunity in lower animals to *Rhus* is frequently due to protection of the skin by hair. This, according to our work on animals, has nothing to do with the case, as the hair was shaved, yet no reactions developed.

In all the foregoing tests, proper controls were run on human volunteers, insuring that the preparations were potent. We believe that they were sufficiently exhaustive; the negative results are reported not on the basis of a single trial, but on five series of tests on each animal concerned, and at different seasons of the year.

### EXPERIMENTS ON HUMAN VOLUNTEERS

The immediate object of the experiments on human volunteers was twofold: first, to amplify the work of Brown [11] and determine approximately how many persons (who thought that they were immune) were absolutely immune, and, secondly, to procure a group of proved and graded susceptibles for testing the value of prophylactic immunity treatment.

Applications were made as follows: The virus was applied to an area about 3 cm. in diameter over the deltoid region, and covered by cotton and adhesive plaster. It was controlled by the application of alcohol to the other arm. One set of tests was conducted on the sound skin, and a second on skin that had been irritated by scraping until serum exuded. The former will hereafter be indicated as "sound" and the second as "irritated" skin.

We began with twenty volunteers, twelve of whom believed that they were immune, and eight of whom were susceptible. Incidentally, the latter testified that the attacks in the last few years had not been as severe as those in childhood. Two of the twelve supposed immunes at once proved to be susceptible on "sound" skin. We now had ten susceptibles and ten immunes. On repeating the tests, but this time to "irritated" skin, there was a further shrinkage of six men in the immune army, leaving only a valid four immunes. The latter has been confirmed by repeated tests—in the case of three of these immunes as many as six times. They have continued to be resistant in spite of concomitant scratching that was deep enough to draw blood. This experience is not in harmony with Williams' idea that there was no such thing as absolute immunity.

We have three levels of susceptibility. In one it obtains on application of virus to sound skin, in the second only after associated scratches, etc., and in the third it is quite lacking under all of our conditions. Actually, there must be steps between these three, for one student developed a dermatitis only provided the virus remained in situ for a long period. Thus, in testing our pieces of *Rhus* bark on one student, if the dressing loosened and the bark fell out within half an hour, the dermatitis would not develop, whereas it did develop when the bark remained over night. In another case it was applied all over the body, including the lips and ears (but not the eyes or nose), without inducing dermatitis; yet, on scratching, this student would develop a severe dermatitis lasting longer than in the most susceptible. That is, instead of the three levels which we have arbitrarily set up, there are actually numerous intermediates which obtain, depending probably on variations in the amounts and concentration of the

11. Brown, E. D.: Experiments on Variability in Susceptibility to Poison Ivy, Arch. Dermat. & Syph. 5:714-722 (June) 1922.

virus, the duration of its application and the peculiarities of the skin.

This emphasizes all the more the variability in severity of spontaneous attacks in one and the same individual which we expatiated on in the beginning of this paper, and how uncertain the interpretation of results of treatment must be in spontaneous clinical cases. Add to this the greater sensitiveness of adolescent as against adult skin, and the point is accentuated even more.

## RESULTS

It thus appears that of the twelve men who believed themselves immune, at least eight (66⅔ per cent.) were not. Of the proved susceptibles, 55 per cent. were susceptible on simple application to the skin, and 45 per cent. only when the skin was abraded. We appreciate, since it was an extract that was applied, that this does not represent absolutely natural conditions, but this is not important, because it must be realized that there is no such thing as a standard mode for the "natural," outdoor acquirements of ivy dermatitis.

Certain sidelights have come out in the course of the foregoing tests:

1. We found that an immunity was not developed at the site of the disease as the result of a preceding attack. We repeatedly induced the same grade of irritation in a previously "poisoned" focus as in the control areas in a corresponding position on the other arm.

2. We recognized no difference in susceptibility as between blondes and brunettes, or obese and thin subjects. Lindley [12] stated that blondes were more susceptible, and Ward [12] noted that brunettes were less susceptible than blondes. Baldwin [12] thought that fat persons were more susceptible than the lean.

3. Children are more susceptible than adults, if we may judge on the basis of the volunteers' statements; the history of all our susceptibles was that the dermatitis was less severe since the age of from 14 to 16, and attacks less frequent, although they had been exposed just as much as when children. Some of those who were susceptible only when scraped gave a history of having had ivy poisoning when a child, but not thereafter, although exposed every summer. Horsfield [13] and Dakin [13] stated that children were less immune than adults.

4. A further sidelight comes in respect to the duration and course of the dermatitis. We found that all stages were shortened as the tests multiplied. To illustrate, at the first test the incubation period might be forty-eight hours and the fastigium two weeks. At the fourth or fifth test the eruption would appear in twenty-four hours, and disappear in a week.

5. It was also found in all our tests that the dermatitis did not spread unless the lesion was rubbed or scratched so that the extract or bark itself came in contact with other parts of the body. When the virus was covered so that the poison had to stay in one place, the dermatitis developed in that position only. The serum from vesicles when applied to other spots on the same persons or to another person did not cause dermatitis.

6. In some of the susceptibles there was some form of referred or systemic irritation. They complained of an uncomfortable feeling or itching in other parts of the body.

## THERAPEUTICS

Therapeutics was the second phase of our work. During the foregoing tests, which had lasted over a period of eighteen months, the potency of our virus had been established, and gradients of susceptibility had been plotted out in our experimental subjects. We felt that we were now quantitatively informed as to the balance between the irritant and irritated. By this time only seven men had survived the drill, but the results in therapeutics which we are about to report were so uniform and unequivocal that this smaller number is sufficient. Treatment was applied precisely as recommended by its proponent,[8] and consisted in four intramuscular injections of ivy virus antigen at intervals of from one to two days. This was accompanied and followed by the oral administration of the drug as recommended. Ten days after the beginning of the treatment, the ivy virus or ivy bark was applied to the arm as a test whether immunity had been induced.[14] All seven of our volunteers developed a furious dermatitis, which lasted as long as or longer than previous attacks.

Five of the seven complained, in addition, of transient pruritus ani which developed during the course of the intramuscular injections, before the tincture had been taken by mouth. In two of the four, hemorrhoids which were previously present but quiescent became aggravated. This means that the virus is comparatively stable—sufficiently so to remain unchanged in its course through blood, intestinal wall and bowel.

The injections, from 0.5 to 1 c.c. of 50 per cent. alcohol, to say nothing of the active principle, were not matters of simple inconvenience. They were painful in about half the subjects for upward of an hour. Soreness lasted for up to a week, and induration for two weeks. Williams and MacGregor also found that pain, while not great, "seldom lasted more than a few hours."

## COMMENT

These results show that, as carried out on controlled human subjects, the approved antigen of Strickler does not protect against the irritation of ivy virus or the plant itself. From this it follows that as to the cure of an already developed dermatitis, we are justified in suspecting that it likewise does not take place, at least not in a specific way. To do so would presume the production of specific protective body defense or their analogues which our experiments have shown to be questionable.

It becomes our duty, next, to reconcile this conflict between our results and those based on spontaneous cases already quoted in the literature. This became all the more difficult after round table discussions at the last two meetings of the American Dermatological Association, at which a majority of the speakers reported favorably on the antigen treatment, considered as a whole. Such opinions command the most careful review of our work and led to searches for sources of error on our part. We have accordingly checked up the identity of our ivy plant, satisfied ourselves that the antigen was potent by inducing a dermatitis by surface application (antigen was received directly from the manufacturer), and reviewed our methods of application of virus and ivy plant. Altogether we can find no respects wherein our tests did not run parallel to the therapeutic course as prescribed. We may safely dogmatize that absolute protection, at least, is not conferred by the preventive system. The only recourse that remains is by way of the quantitative route; i. e., that there is a nonspecific and temporary exaltation of body

12. Cited by McNair: Rhus Dermatitis, p. 141.
13. Cited by McNair: Rhus Dermatitis, p. 142.

14. A few days after the last intramuscular injection, some of the "antigen for intramuscular injection" was painted on the arms of three persons. In from twenty-four to forty-eight hours a dermatitis developed and ran the same course as that induced by our own ivy virus. This shows that the antigen does not protect against itself.

resistance analogous to that induced by turpentine and foreign protein which, in a certain number of individuals —not all—will neutralize milder (only) doses of ivy virus. This, in the light of our results on volunteers, is as much as we can concede. This might collectively reduce the clinical incidence of ivy dermatitis and, in cases of isolated persons, lead to spectacular impressions; but it should not lead to final conclusions. That a favorable effect cannot be visited on *all* subjects is shown by two of our volunteers, who had been "protected" and yet developed violent reactions after the virus had been simply touched to the skin; these two had learned that they were extremely susceptible and would not permit the virus to be rubbed on. One of these men developed, in addition, a spontaneous attack on the fingers at the same time after pulling out some small ivy plants from his suburban garden.

After all is said and done, it remains that 100 per cent. of the volunteers succumbed to the crucial test which every dermatologist employs when checking up on suspected causes of dermatitis venenata; i. e., the deliberate application to the skin of the substance to be tested—in this case, ivy virus. In the favorable reports quoted in the literature there is some circumstantial evidence that virus came into contact with the skin, and three definite statements, as far as we can find,[15] in which patients reported that they could pick the leaves or rub them into their hands. In no instance has the physician reported that he actually applied the virus or plant to the skin in confirmation of results.

### CONCLUSIONS

We confirm that:

1. The discharge from the lesion does not disseminate the disease. The virus itself must come in contact with the part.

2. Susceptible individuals may contract ivy poisoning at any time of the year, provided the juice of the plant comes in contact with the skin.

As new findings we report that:

1. Repeated attacks tend to shorten all the stages of subsequent attacks.

2. Local immunity is not developed by repeated attacks of ivy poisoning.

3. There is such a thing as absolute (and probably permanent) immunity against ivy poisoning.

4. In our series, two thirds of the men who believed themselves immune were not immune.

5. In 45 per cent. of the susceptibles it was necessary that some such defect in the epidermis, as scratches, should be present before a dermatitis would develop.

6. It appears that all of the commoner laboratory animals are immune to this virus.

7. Pruritus ani, transient, appeared in the majority of those receiving preventive treatment. In two subjects, hemorrhoids were aggravated.

8. The pain at the sites of intramuscular injections outweighs the danger of future attacks of ivy poisoning such as are only suppositious in the commoner walks of life.

9. In this series of sufficiently controlled subjects, the preventive system of treatment of Strickler did not prevent. It is possible that the curative value of this system is likewise scant or nil, and that the beneficial results which have been reported are dependent on and ascribable to the variable susceptibility of different individuals and the varying intensity of the irritant as applied at different times.

15. Schamber .tnote 2). Strickler (Footnote 3, second reference).

# COSMETICS *

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Cunningham,[1] Knowles,[2] Goeckermann,[3] Oliver,[4] Woltman,[5] Cole [6] and others have written on the harmful effect of arsenic, mercury, lead and paraphenylendiamin in cosmetics. With the exception of the latter drug, these are fortunately very unusual ingredients of the cosmetics in general use. In this article we mention the components of the cosmetics commonly employed and give in some detail an account of skin eruptions due to their use that we have not previously seen reported in the literature. We describe dermatoses due to face powder, rouge, lip stick, hair dye, wrinkle remover and nail polish and give, when possible, the component responsible for the eruption.

### FACE POWDERS

Face powders are of two kinds, heavy and light. The heavy powders are composed mainly of precipitated barium sulphate and very finely powdered talcum in varying proportions. The lighter powders are composed principally of starch. The finest powders are composed of rice powder, as this is considerably finer than either wheatstarch or cornstarch, although all three of these are used. A powder of rice starch alone is generally so light that most women will not use it. Zinc oxid is sometimes added, but it is not a common ingredient. Lead carbonate was formerly used but is now employed in only two or three cheap powders that are seldom sold in the United States. Bismuth subcarbonate was also used but is now found only as a suspension in the so-called liquid powders.

Most of these ingredients are often prescribed for pathologic skin conditions and are generally harmless. Their long continued use as a cosmetic may, however, cause a mechanical obstructive action on the pores. This is somewhat obviated if the preparation is removed each night by some cream or cleansing lotion.

Powders are usually colored with carmin for the flesh tints and yellow ocher or umber for the brunette shades. The bizarre shades are frequently obtained by the addition of minute quantities of the anilin dyes. This may set up a dermatitis, just as the anilin derivative paraphenylendiamin may when used as a hair dye. A woman, aged 30, recently reported to us with a dermatitis over both cheeks in an area about the size of a silver dollar. On questioning, we found that it developed a few days after she had begun the use of a pumpkin colored compact powder. We later discovered that the color in this particular powder was obtained from anilin dye.

Most powders are perfumed. Some persons have an idiosyncrasy to certain perfumes and will develop a dermatitis even from the minute quantity that they encounter in a face powder. One of our patients

* Read before the Section on Dermatology and Syphilology at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

1. Cunningham, W. P.: The Fair Face of Nature, M. Rec. **89**: 356 (Feb. 26) 1916.
2. Knowles, F. C.: Dermatitis Caused by Cosmetics and Wearing Apparel, Pennsylvania M. J. **19**: 897 (Sept.) 1916.
3. Goeckermann, W. H.: A Peculiar Discoloration of the Skin, J. A. M. A. **79**: 605-607 (Aug. 19) 1922.
4. Oliver, Thomas: Saturnine Asthma, Lancet **2**: 907-909 (Oct. 28) 1922.
5. Woltman, H. W.: Lead Poisoning from Face Enamel, J. A. M. A. **79**: 1685 (Nov. 11) 1922.
6. Cole, H. N.: The Dermatoses Due to Cosmetics, J. A. M. A. **82**: 1909-1911 (June 14) 1924.

develops a dermatitis whenever she encounters any cosmetic containing the slightest trace of eau de cologne. Compact powders are usually heavy powders moistened with alcohol and then compressed. Sometimes a little chalk or zinc oxid is added, as such a mixture packs more solidly. In general, the compact powders cause more mechanical obstructive action than the loose powders; otherwise the action is the same.

### ROUGE

Rouge is composed mainly of zinc oxid to which chalk and sometimes starch is added. The coloring matter is from carmin or one of the anilin dyes. We have a patient, an actress, who had to discontinue the use of a certain rouge because of the extensive dermatitis that it provoked. We were unable to ascertain the ingredients used in its manufacture. The dermatitis did not recur when a different rouge was employed. It may have been due to an anilin dye.

### LIP STICKS AND LIQUID LIP ROUGE

Lip sticks are composed of wax, pomade and cacao butter in varying proportions. The pomade is lard scented by natural flowers, although in the cheaper lip sticks perfumed lard may be used. The coloring matter is carmin or an anilin dye.

The liquid lip rouge is generally carmin or one of the anilin dyes in an alcoholic solution. We have seen two patients with a chronic cheilitis that cleared after discontinuing the use of liquid lip rouge of a bizarre purplish color.

### HAIR DYES

There are five types of hair decolorizers and dyes in common use:

1. To decolorize the hair, hydrogen peroxid is the principal ingredient used.
2. To obtain a red hue, the vegetable coloring matter henna is generally employed.
3. For various shades of brown, the two vegetable dyes henna and indigo are mixed together.
4. There are innumerable hues obtained by employing the salts of lead, copper, silver, cobalt, nickel and cadmium.
5. Probably the best dyes of all and also the most harmful are those obtained from the derivatives of anilin; namely, paraphenylendiamin.

In general, all dyes and bleaches do some harm to the hair. After a few applications the hair usually becomes dry and lifeless, but its growth is not seriously interfered with unless there is a dermatitis of the scalp. The hair may become shorter, however, as the ends break more readily owing to the excessive dryness brought on by the dye.

Practically all the dyes have caused damage to the skin in one person or another. Many persons after each time the hair is dyed will have a little puffing of the eyelids, and an insignificant rash on the forehead and perhaps the neck. It may remain for a few days and then disappear without treatment. Persons who have these apparently insignificant symptoms should discontinue the use of the dye, or a severe dermatitis will certainly develop.

Of all the dyes, those containing vegetable pigments are the least harmful. They seldom cause irritation to the skin unless a person has an idiosyncrasy to them. They do not, however, give the darker colors or as good and permanent a color as some of the more dangerous mineral or anilin dyes.

The dyes made from anilin may cause considerable irritation to the skin if they are not properly used. They are particularly popular as they are easily applied, remain for many months and give almost every imaginable hue, depending on the length of time they are allowed to remain on the scalp. Paraphenylendiamin and hydrogen peroxid are mixed together, and the resulting solution is applied to the hair. After this solution has been allowed to remain for a certain period of time, it should be thoroughly washed out. One may be tempted not to do this, as it may spoil the color. If the dye is allowed to remain, the damage that it may cause is considerable. What is even more dangerous, which frequently occurs, is to apply the dye and the hydrogen peroxid separately. By this means a finer or more lasting color is obtained, but the risk of local and toxic damage is greatly increased. We recently saw a patient with a severe weeping dermatitis over the scalp, ears, face and neck that began on the evening after an anilin dye was applied to the hair. In the next few days it extended all over the body. For several days the eyelids were so swollen that the patient was unable to see. It was more than six months before the dermatitis had entirely disappeared, and in the meantime most of the hair had fallen out.

The areas of dermatitis may at times be alarming but they are not to be compared with the toxic symptoms that may arise from the use of certain dyes, especially those containing lead and the anilin derivatives. A patient may suffer from inability to sleep, dizziness, weakness of the legs, attacks suggesting epilepsy, stomach upsets, diarrhea, neuritis or poor eyesight. Several deaths are reported from the use of hair dye. Nott [7] recently reported the occurrence of severe symptoms that almost ended fatally in a man who applied hair dye to his patrons without wearing rubber gloves. He absorbed some of the drug through the skin of his hands and arms, and also inhaled the fumes while applying it. Men with dyed mustaches or women who hold the strands of dyed hair between their lips run additional risks of poisoning and toxic symptoms.

### WRINKLE REMOVERS

The wrinkle removers in general use are of three types: (1) astringents, (2) fillers and (3) cauterizing agents.

The astringents are applied by the patient herself and are seldom harmful. They generally contain aluminum salts in about the same proportions as are used for excessive perspiration. They are not of any value.

We continue to see patients who have had wrinkles or sunken areas in the face or neck "filled out" with some foreign material, usually paraffin. We have not, however, seen any one who has received this type of treatment in the last year or two. The result may be pleasing to the patient, in some instances, for many years, but we believe that all of them have serious trouble at some time. Nature's attempt to wall off the foreign material by fibrosis causes the disfiguring masses. We have several patients with chicken egg sized indurated areas in the cheeks or about the neck, and one with both eyes entirely closed from lymphatic block in the eyelids, due to neighboring fibrosis. The results of surgery in this condition are very discouraging. We have seen three patients with lesions clinically and pathologically indistinguishable from xanthoma palpebrarum developing in the skin over fibrotic paraffinomas on the eyelids and cheeks.

During the last three months we have seen two patients on whom an agent entirely unique to us had been employed. Phenol (carbolic acid) was painted

7. Nott, H. W.: Systemic Poisoning by Hair Dye, Brit. M. J. 1:421 (March 8) 1924.

over the entire face and neck with the idea that the resultant superficial fibrosis would remove the wrinkles. The phenol generally used is about a 65 per cent. solution in glycerin and alcohol. It is applied over fairly extensive areas, in our two cases over the entire face and neck. On the following day the entire swollen and puffy area is covered over with strips of adhesive tape. This is allowed to remain for forty-eight hours and then is removed along with the superficial layers of cauterized epidermis. A powder of some sort is applied to the swollen and oozing skin that remains. The resultant crust remains for two or three weeks and then separates, leaving a very red and boardlike skin. We saw one of our patients three months after the treatment had been given. She was unable to close one eye on account of excessive fibrosis, and a rather severe ectropion will undoubtedly always remain. The cheeks were so stiff and boardlike that the patient was unable to whistle, and ate with some difficulty. A second patient had been treated fifteen months before her visit to us. The skin over the face and neck was quite red, and felt like an active scleroderma under the palpating finger. There were three definite keloid areas, one pulling down the left commissure of the mouth. These were the result of secondary infection.

We have seen in the newspapers of a neighboring city the report of the deaths of two women from this procedure. In both, the face, neck and arms had been treated. The coroner reported that death was due to phenol poisoning. The "beauty specialist" in one case is a fugitive from justice on a manslaughter charge, and the other is out on bail awaiting trial.

It would be unwise for the medical profession to combat charlatans and "beauty specialists," who are responsible for most of the ill effects from wrinkle removers. More can be accomplished by educating the public or by enacting proper legislation against the injection of paraffin and the application of "phenol packs" by these unlicensed individuals.

### NAIL POLISHES

There are two types of nail polish in general use, the powdered and the liquid. The powdered ones usually contain tin dioxid, as this is hard, gritty and yet does not scratch. We have never seen any eruptions on the skin from its use.

Liquid nail polishes are composed of tincture of benzoin or a solution of a cellulose acetate usually in acetone. We have recently had two patients with a dermatitis on areas, far removed from the finger nails, due to liquid nail polish. We do not take any credit for discovering the cause of the eruption in the first patient. She had a recurrent erythematous and slightly thickened pruritic area the size of a fifty cent piece on the side of the neck. After excluding a dermatitis from furs, we classified the eruption as an eczema and proceeded to treat it accordingly. One day the patient remarked that the eruption always appeared or became aggravated the day after using a certain nail polish. It was some time before we could find any connection with this incident. Finally we discovered that she was in the habit of sleeping on one side, with her hands under her neck. In this way her nails were in contact with the skin of the neck for the greater part of eight or nine hours each night. For our satisfaction, the patient used the nail polish again with the same result. We are not positive which ingredient in the polish caused the eruption. We at first thought that it was the acetone, and had the patient apply it in a bland oil to the neck each night; but it did not cause any irritation. We are at present trying out the other ingredients. We have had one other similar case since that time. We may find that this is a rather common cause for a dermatitis on the neck and perhaps elsewhere on the body.

### SUMMARY

Sufficient emphasis has not been placed on the usual components of cosmetics and the dermatoses that they may provoke. Many of the so-called eczemas in women, if carefully investigated, will be found to be cases of dermatitis venenata due to cosmetics. The anilin dye used as coloring matter in the bizarre tints of face powder, rouge and lip stick may cause a definite dermatitis. Hair dyes containing the vegetable pigments are seldom harmful, while those containing the minerals or anilin products may cause skin eruptions or general ill health. The attempted removal of wrinkles by applying phenol to large areas of the skin surface may cause considerable facial deformity and even death. A dermatitis on the sides of the neck in women may be due to irritation from recently applied liquid nail polish that comes in contact with the neck when the patient sleeps with the hands under the face. Legislation should be enacted prohibiting the use of the anilin dyes in the manufacture of cosmetics, and the application of phenol for the removal of wrinkles by unlicensed charlatans and beauty specialists.

384 Post Street.

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## ABSTRACT OF DISCUSSION

DR. HAROLD N. COLE, Cleveland: It is well for our members to keep this before the profession and before the public. I hope the American Medical Association will see that this matter is circularized through the newspapers again. In that way we shall do much toward letting the senseless women know what they are doing in using dyes in their hair, rouge and other cosmetics. We have seen several cases of dermatitis from paraphenylendiamin used on the eyebrows, and we have seen many due to the use of hair dye containing this drug. We have also seen several cases due to hair tonics, particularly those containing arsenic. I feel confident that many of the peculiar types of dermatitis seen around the neck and face in both women and men, if we inquire carefully, will be found to be due to a hair tonic or to having something done for them that has caused the disturbance. I hope the question will be brought up again next year and that the members of the section will cooperate in answering the questionnaire that is sent out so that we may continue this work.

DR. HOWARD FOX, New York: I was much interested in this subject recently in connection with a study of medical quackery. There is no question that many things are due to the salts of the heavy metals, particularly lead. Attention has been called to this by Cole, Goeckermann and others. A word about federal control. The Food and Drugs Act does not protect against cosmetics that are dangerous unless they have some medical claim. If not, they can put in anything they wish. Recently a bill was introduced in New Hampshire prohibiting the manufacture of hair dye containing paraphenylendiamin, lead and one or two other things. This passed the lower house but was held up in the senate, owing to the statement that it would not prevent the importation from other states of cosmetics containing these ingredients and that it would interfere with business. In other words, the regulation of cosmetics should be federal rather than state. It is hardly our place to discuss the esthetic side of cosmetics, but it may be interesting to quote the *Druggists' Journal*, which says that at present the public uses nearly eighteen million packages of rouge, generally harmless, I think; 240 million packages of face powder, which in the main is also harmless, and many million jars of cream and other cosmetics.

DR. L. K. MCCAFFERTY, New York: One point about paraphenylendiamin: If one will apply a little behind the

ear, if the patient is sensitive a wheal or something of that nature will develop. Most of the hair dyes contain this drug.

DR. LULU HUNT PETERS, New York: I am one of those senseless women who have been addicted to powder and rouge for some years, but I have never had a dermatitis. I wonder whether the percentage is not rather small. The number of such dermatoses we treat must be very small compared to the millions of women who use face powder and rouge. I wonder whether there are any statistics on this question and whether there is any way that we can tell from the label, other than by getting a good brand of rouge and powder—and the real reason we use them is to please you, you understand. Is there any way that we can tell that we are getting a preparation that will not produce a dermatitis? I am also interested in surgery for wrinkles, looking forward to having that done sooner or later. I have seen some very marvelous cases in New York, without any keloids forming later. I conduct a health column in one of the papers and receive many letters from women inquiring whether wrinkles can be removed. I tell them to use a little ice and massage, and never fail to warn against going to quacks, but tell them to see a good skin specialist.

DR. WILLIAM C. WOODWARD, Chicago: I came to report on the result of our activities in carrying out your instructions of last year regarding legislation to regulate the sale of cosmetics, and hair dyes and furs containing paraphenylendiamin. We are about to send out questionnaires, in order to assemble facts to present to the manufacturers of these substances and to legislators. The better class of manufacturers will cooperate with us; they themselves need protection against the class of manufacturers who will do anything for the sake of the almighty dollar. We are bound, however, to meet objection from some quarters, and we can best overcome it by an adequate array of facts. Your cooperation in keeping case records and reporting cases is therefore solicited. Accuracy as to time, place and other details is essential. How insistent the demand for accuracy is appears from the suggestion made by a representative of the fur trade. He was asked to criticize a draft of our proposed questionnaire, and thereupon suggested that it ask the reporting dermatologist to state whether he had been able to find any cause for the dermatitis reported other than fur. When you receive your questionnaires you will see that we ask you to state not only whether the dermatitis was due to the cosmetic, the hair dye or the dyed fur, but also whether it could have been due to anything else. Federal legislation must supplement state legislation. State legislation cannot cover foreign and interstate trade, and many of our cosmetics, hair dyes and dyed furs are distributed in such trade. But federal legislation cannot reach cosmetics, hair dyes and dyed furs that form parts of strictly interstate trade. This can be reached only by state legislation. Therefore legislation by both federal and state governments is necessary. While we are asking you to cooperate with us by reporting your cases of dermatitis due to cosmetics, hair dyes and dyed furs, we are making a search of the literature, to find out what has already been recorded regarding such matters, in this country and abroad. We are going to try to find out, too, what has been done, if anything, for the protection of the public by laws enacted in other countries.

While I am before you, I should like to give you a word of caution with respect to a matter that is entirely foreign from what I have thus far discussed. Dermatologists may soon find themselves in the same position with relation to the so-called cosmetician in which ophthalmologists are already finding themselves with respect to optometrists. In several states, efforts have been made and are being made to procure legislation for the licensing for the so-called cosmetician. One or two states have already enacted such legislation. Some of the bills that have come to my notice seem to me to carry the functions of the cosmeticians entirely too far; to license them, for instance, to remove moles and warts indiscriminately, by the use of electrolysis. Whether authority to do such work should or should not be put into the hands of persons with only such training as is to be required of the cosmetician, you can tell as well as I. In the study of such legislation, do not presume that because the licensing is to be under your state board of health there will be no danger to the public or to the status of the dermatologist. After such legislation has once been passed, the state board of health can do no more than to enforce it. The essential thing is to see that such legislation as is enacted, if any, is in proper form in the first instance. If such legislation is enacted, there will be a constant danger lest those licensed under it by a process of gradual expansion become quasi-dermatologists, just as our osteopaths have expanded into more or less full-fledged physicians. And then, they may seek to do for the dermatologists what the optometrists are seeking to do for the ophthalmologists; that is, to prevent the physician from doing any work within the field assigned to the inferior calling, unless the physician has been licensed by the licensing board established primarily for the supervision and control of such nonprofessional calling.

DR. JAMES HERBERT MITCHELL, Chicago: I have been in communication with Dr. Dodson, editor of *Hygeia*, for some time past and have helped out in a small way with the replies to questions sent in by subscribers and others. Dr. Dodson tells me that he is flooded constantly with requests for not negative information but positive information, and says we are failing in our duty in not constantly condemning this and that. What he wishes is information about something that is safe, not things that are unsafe. He wants simple formulas for things that can be used. We have some remarkable legislation in this country and some splendid examples of its inefficiency. I think that a campaign of education, and to have somebody set the style of going without cosmetics, would be far more helpful than trying to legislate against their use. Answering Dr. Peters, I think not a day passes that I do not see a case of dermatitis which I can say definitely is due to cosmetics. Some simple talcum powders will do it. I think that many dermatoses about the face and neck which we have thought due to various things are really due to cosmetics. Even orris root will cause dermatitis in some persons. I have eliminated this and that and have tried some simple preparations that gave relief.

DR. LAURENCE R. TAUSSIG, San Francisco: I wish only to emphasize the fact that paraphenylendiamin is the most dangerous of the cosmetics with which we have to deal. It is not a matter of idiosyncrasy but rather a matter of relative sensitiveness. That is, if you use enough of this paraphenylendiamin, almost every patient can be given a dermatitis, while in the case of eau de cologne, for instance, relatively few patients will show any dermatitis from its use.

## *Clinical Notes, Suggestions, and New Instruments*

### SYMPATHECTOMY IN BRONCHIAL ASTHMA*

MAXIMILIAN A. RAMIREZ, M.D., AND EUGENE H. POOL, M.D., NEW YORK

The favorable report of Kümmell[1] on resection of the cervical sympathetic ganglion in bronchial asthma led us to attempt this procedure in two severe cases of asthma. The patients had been under observation by one of us for a number of years in the clinic of the French Hospital. No improvement had resulted from the usual methods of treatment.

In selecting cases for sympathectomy, we desire to stress the necessity of doing a very complete test against all available proteins, as only nonallergic cases should be subjected to this method of treatment.

#### REPORT OF CASES

CASE 1.—*History.*—J. C., a man, aged 55, had had frequent attacks of coughing, dyspnea and profuse expectoration for twenty-nine years. He had had periods of remission and felt fairly well. For the past few years, shortness of breath had been quite constant, and he had attacks of coughing almost every night. The patient had been receiving treatment at the clinic for three years. The symptoms were not improved, and

* From the Department of Immunology, French Hospital.

1. Kümmell, Herman: Die operative Heilung des Asthma bronchiale, Klin. Wchnschr. **2**: 1825 (Oct. 1) 1925.

he had become progressively worse, and had lost considerable weight during the past year. The previous and family history were irrelevant except that he had had pneumonia twenty-three years before.

*Examination.*—The pupils were equal and reacted normally to light and in accommodation. The chest was symmetrical and of the emphysematous type; an examination of the lungs showed a well marked emphysema and chronic bronchitis. The heart was normal. A complete protein test was negative. The blood chemistry was normal. The Wassermann reaction was negative. The urine was normal.

*Treatment and Course.*—June 12, 1924, an incision was made parallel to the anterior border of the right sternocleidomastoid muscle, extending from the tip of the mastoid downward for about 5 inches. The skin, subcutaneous tissue and platysma were incised. The omohyoid muscle was dissected and cut. The anterior border of the sternomastoid muscle was exposed. The accessory nerve was identified and isolated. The carotid and jugular sheath was then dissected free, and the sympathetic chain exposed. The sympathetic was cut above the superior ganglion and stripped downward. The chain was dissected down below the inferior ganglion where its branches were cut and the chain removed. The wound was closed without drainage. The postoperative condition of the patient was good. Both ears were pink; the right pupil smaller than the left; the pulse rate remained between 90 and 100. The blood pressure was equal on the two sides and varied between 115 and 125 mm. of mercury. The cough, dyspnea and expectoration seemed definitely lessened. The urine was normal.

Four months after the operation, September 29, the blood pressure of the right arm was systolic 122 and diastolic 80 mm. of mercury, and in the left arm systolic 118 and diastolic 80. The right pupil was smaller than the left, but reacted normally to light and in accommodation. There was increased lacrimation on the right side. For the past few weeks the patient had been coughing considerably at night and had had return of dyspnea; expectoration was a little less than before the operation. Immediately following the operation, there seemed to be a definite improvement in the symptoms, but practically all the symptoms had returned with little, if any, difference in the intensity.

April 20, 1925, the right pupil was still smaller than the left, and there was a certain amount of subconjunctival injection of the vessels and increased lacrimation in this eye. The symptoms had completely returned and the patient had as much cough, dyspnea and expectoration as before the operation.

CASE 2.—*History.*—M. E., a woman, aged 39, reported an illness beginning about two years before, following an acute cold. Since then, the patient had had almost daily attacks of cough, shortness of breath and expectoration. She was very nervous and did not sleep well on account of difficulty in breathing and cough, which was much worse at night. The bowels were constipated. Menstruation was normal.

*Examination.*—She had moderate emphysema and generalized bronchitis. A roentgenogram of the chest showed increased peribronchial fibrous tissue and moderate emphysema. The blood chemistry was normal. A complete protein test was negative. The urine was normal. The patient had been under treatment at the hospital clinic for about two years, with very little improvement in symptoms.

*Treatment and Course.*—Sept. 18, 1924, the right sympathetic chain was removed from a point above the superior ganglion to below the middle ganglion. It was doubtful whether the inferior ganglion was removed. After the operation, the blood pressure on both sides varied, the right side between 90/70 and 115/80, and the left side between 90/60 and 100/70. The right pupil was smaller than the left, and there was ptosis of the right upper lid and increased lacrimation on the right side. Immediately following the operation, the patient's breathing was easier, and her cough and expectoration definitely lessened.

Within two weeks after leaving the hospital, the patient again complained of cough, expectoration and difficulty in breathing with the same severity as before the operation. This condition persisted.

April 20, 1925, the patient was still having the same symptoms as before the operation. The right pupil was smaller than the left, and there was moderate ptosis of the right upper lid and increased lacrimation in the right eye.

COMMENT

These cases show the apparent futility of unilateral cervical sympathectomy in bronchial asthma. We have not attempted bilateral sympathectomy. On an anatomic and physiologic basis, it appears to us that if relief is to be expected in such a bilateral reaction, it will be necessary to remove the sympathetic chain on both sides.

47 West Fifty-Fourth Street—107 East Sixtieth Street.

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# New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION. W. A. PUCKNER, SECRETARY.

**RHUS TOX. ANTIGEN-STRICKLER.**—A solution of a substance extracted from the fresh leaves of *Rhus toxicodendron.*

*Actions and Uses.*—Rhus tox. antigen-Strickler is used to determine sensitiveness to *Rhus toxicodendron,* to desensitize persons against poisoning with *Rhus toxicodendron,* and to relieve the symptoms of the dermatitis produced through contact with the plant.

*Dosage.*—To determine sensitiveness to *Rhus toxicodendron,* 0.1 Cc. of rhus tox. dermal test is injected intradermally. To desensitize against *Rhus toxicodendron* poisoning, four doses of 0.5 to 1.0 Cc. of rhus tox. antigen-Strickler injected intramuscularly may be required. For treatment, three doses of from 0.5 to 1 Cc. injected intramuscularly are given at twenty-four hour intervals.

Manufactured by the American Chemical Laboratories, Philadelphia. No U. S. patent or trademark.

*Rhus Tox. Antigen-Strickler:* Packages of four 1 Cc. vials, each Cc. containing 0.0125 Gm. of substance dissolved in 40 per cent. alcohol.

*Rhus Tox. Dermal Test:* Packages of a 1 Cc. vial, each Cc. containing 0.005 Gm. of substance dissolved in a menstruum composed of dextrose, 15 per cent.; alcohol, 10 per cent., and water, 75 per cent. (accompanied by a vial of rhus venenata dermal test).

Freshly gathered leaves of *Rhus toxicodendron* are extracted with absolute alcohol; zinc sulphate is added to the alcoholic extraction and then sodium phosphate to precipitate the zinc as zinc phosphate; the precipitate is then collected and dried. The precipitate is extracted with ether in an extraction apparatus; the ether evaporated and the residual extract dried at a low temperature.

**RHUS VENENATA ANTIGEN-STRICKLER.**—A solution of a substance extracted from the fresh leaves of *Rhus venenata.*

*Actions and Uses.*—Rhus venenata antigen-Strickler is used to determine sensitiveness to *Rhus venenata,* to desensitize persons against poisoning with *Rhus venenata* and to relieve the symptoms of the dermatitis produced through contact with the plant.

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Freshly gathered leaves of *Rhus venenata* are extracted with absolute alcohol; zinc sulphate is added to the alcoholic extraction and then sodium phosphate to precipitate the zinc as zinc phosphate; the precipitate is then collected and dried. The precipitate is extracted with ether in an extraction apparatus; the ether evaporated and the residual extract dried at a low temperature.

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SATURDAY, JUNE 27, 1925

## THE FOOD AND FUEL OF ATHLETES

According to the newer conceptions of the nature of muscular contraction, sponsored in particular by the German physiologist Meyerhof and the English physiologist A. V. Hill,[1] the primary fuel of muscle is carbohydrate. If fat is used as a source of energy in muscular work it must first be converted, so Hill assures us, to carbohydrate somewhere in the body. The recent conclusions of Henderson and Haggard[2] on the fuel of muscular work from investigations on the Olympic championship crew of 1924 call for caution in the interpretation of the problem under consideration. Their actual observations on the respiratory quotients of these athletes, who were superlative in muscular performance over the brief periods of many races, are in general agreement with the conclusions of the Scandinavian physiologists Krogh and Lindhard,[3] according to whom the proportion of fat to carbohydrate broken down is a function of the available supplies of these substances.

This is in harmony with a long held view that the muscular machine can transform a definite fraction of the energy liberated by the combustion of any available substance into mechanical work, provided the substance can be oxidized in the organism. Henderson and Haggard observed with the oarsmen that a man continues to consume during a short period of great exertion whatever proportions of fat and sugar he may have been burning during rest prior to work. Sugar, they state, is therefore not the sole fuel of muscular energy. It is, however, the fuel most immediately available for muscular work and is utilized with much less distress to the subject than is fat, as Krogh and Lindhard have shown. Sugar produces 5.05 calories for each liter of oxygen absorbed by respiration; from fat only 4.7 calories is obtained per liter of oxygen, 7 per cent. less on the same volume of air breathed and oxygen consumed.

Certain dietary considerations follow from such findings. The newer data indicate that at least two thirds of the energy expended by most athletes now is derived from fat. The Yale physiologists believe that it would probably be distinctly helpful to "wind" and to the prevention of overtraining if athletes were fed so that their respiratory quotients were kept constantly well up to 0.85 or even 0.9, instead of the lower figure indicative of greater fat combustion. That carbohydrate exhaustion through work may proceed to the point of actually decreasing the circulating carbohydrate has been demonstrated on a group of runners in the American marathon race.[4] There was a close correlation between the condition of the runner at the finish of the race and the level of his blood sugar. Those who had the extremely low blood sugar level presented a picture of shock not unlike that produced by an overdose of insulin. It was suggested, therefore, that the adequate ingestion of carbohydrate before and during any prolonged and violent muscular effort would be of considerable benefit in preventing the hypoglycemia and accompanying development of the symptoms of exhaustion. Henderson and Haggard advise in a similar vein when they suggest that it would probably be advantageous to raise the respiratory quotient further and to provide ample sugar in the blood and tissues, a half or three fourths of an hour before any prolonged contest. Their dictum is: Sugar is the best quick fuel for intense exertion.

## TOBACCO SMOKING

The number of cigarets that are smoked annually in this country is counted in billions, and the distribution of the other forms of purchasable tobacco approaches a scarcely less formidable magnitude. The concentration of the possible effect is augmented by the fact that by no means all the population indulges in the use of tobacco. Of course, the consideration of the physiology or pharmacology of tobacco is not a new theme. In some places it has long been a part of the compulsory scheme of public school education, although experts have often regarded its treatment there as somewhat partisan and unscientific. In urging that the influence of tobacco should be discussed as a health question, Williams[5] points out that to the lay mind it has presented a moral question. At any rate, it is often discussed on that basis by the opponents of its use.

There has been some parallelism between tobacco and alcohol in respect to the controversies that each has aroused. Both have been hailed by many as harmful and by some as actually beneficial to those who indulge. Each is concerned with the establishment of habits that may not be approved. Further, each substance has

1. When a Muscle Contracts, editorial, J. A. M. A. **84**: 442 (Feb. 7) 1925.
2. Henderson, Yandell; and Haggard, H. W.: The Maximum of Human Power and Its Fuel, Am. J. Physiol. **72**: 264 (April) 1925.
3. Krogh, A., and Lindhard, J.: Biochem. J. **14**: 290 (July) 1920.
4. Levine, S. A.; Gordon, Burgess; and Derick, C. L.: Some Changes in the Chemical Constituents of the Blood Following a Marathon Race, J. A. M. A. **82**: 1778 (May 31) 1924.
5. Williams, J. F.: Personal Hygiene Applied, Philadelphia, W. B. Saunders Company, 1925.

been charged, on the one hand, with being a stimulant or, on the other, as bearing all the stigmas of a depressant drug. The evident propriety of exercising care in forming a judgment and discretion in stating a belief respecting such debated topics challenges those who discuss such controversial topics as tobacco presents, with the necessity of securing objective data rather than subjective impressions wherever this is possible. Even so, variations in susceptibility and tolerance—factors of human experience that are as yet little understood—suggest the use of caution in making generalizations.

To say that overindulgence in any substance may produce harm is a platitude. It may apply to turnips and tomatoes as well as to tobacco. In the effort to secure a more tangible evidence of the immediate effects of tobacco smoking, Mendenhall[6] of the Evans Memorial, Boston, has studied the effects on a sensory mechanism by measuring the variation in its threshold, if any occurred, with smoking. The sensory mechanism selected was that which is aroused by weak faradic stimulation of the skin of the fingers. If tobacco smoking should cause a depression of sensation, it was thought that the immediate effect would be to raise the threshold of the mechanism under observation. Furthermore, it was thought possible that the desire on the part of a person to indulge in a smoke might be the expression of a hyperirritable central nervous system, in which the consequent demand would be to lessen this hyperirritability. By repeated satisfaction of this demand by means of smoking, essential foundations are laid for the establishment of a habit. Mendenhall's tests show that the effect of smoking is not always one of depression, but may be stimulation to the central nervous system, if the sensory threshold may be taken as indicative of its general state. Unexpected is the finding that the effect of smoking seems to be conditioned on the state of the sensory mechanism at the time when smoking is indulged in. It is noted that, when the subject's threshold is definitely below his normal, smoking causes depression, as is indicated by a rise in threshold; whereas, when the subject's threshold is definitely above normal, smoking causes stimulation, as indicated by a lowering of the threshold: in other words, he has become more keen in his detection of a sensory impression. The results obtained with nonsmokers did not differ essentially from those of smokers.

Mendenhall has endeavored to relate his observations to the widespread impulse to indulge in a smoke. Since feeling or sensation is an expression of our physical state, it would be logical, he says, to conclude that man feels best when he is in a normal condition. Rest has the effect of causing a return to a normal state, and it is common knowledge that many fall into periods of rest so easily that it acquires the character of a habit. According to Mendenhall, smoking has an effect similar to rest except that it is a much more marked and rapid effect; and if we may look on resting as a habit, it is not surprising that a more powerful agent, such as smoking, should engulf a much larger number of people. It should be emphasized, however, he adds, that the effects obtained by smoking are much more intense in the way of depression than in the way of stimulation, and thus resemble the action of our so-called habit-producing drugs. What chemical component is responsible for the results described has not yet been ascertained with certainty. In any event, Mendenhall believes that the commonly experienced stimulating action of smoking on one who is depressed, and, conversely, the depressing effect on one who is irritable, fits in with the observations in which the threshold for nervous reaction was accurately measured. Both the advocates and the opponents of tobacco will find items of interest and consolation in the research just reported.

6. Mendenhall, W. L.: A Study of Tobacco Smoking, Am. J. Physiol. 72: 549 (May) 1925.

## SIDELIGHTS ON GASTRIC ACIDITY

A casual study of the literature of gastro-enterology will suffice to show that the technic of gastric analysis, which plays a conspicuous part in this field of clinical diagnosis and therapy, has been subjected to repeated criticisms. Some of these have been successfully met by improvements in procedure. Even the newer fractional gastric analysis, which promised to give a better picture of the conditions prevailing during digestion in the stomach than had been afforded before, has not brought satisfaction to critical observers. Gorham[1] formulated the foremost objections several years ago by demonstrating that the gastric chyme is not, in the majority of instances, a homogeneous mixture after a test meal, and that the acidity of different portions may vary widely. Consequently, as he states, a small sample as obtained in the "fractional method of gastric analysis," or in other methods wherein only a small portion of the contents is obtained for analysis, is not, in the majority of instances, representative of the gastric chyme as a whole because the acid concentration of this portion may vary considerably from the highest or lowest acidity of some remaining portion or the average acidity of the entire gastric contents at that period. The "sample" obtained by the "fractional method" represents the acidity of the gastric chyme only at that moment in the part of the stomach from which it is obtained; in other words, it is dependent entirely on the position of the tip of the tube in the stomach. This position is necessarily a constantly changing one, owing, first, to the change of size and position of the stomach while emptying itself through the pylorus and by aspiration; secondly, to the shortening and lengthening of the stomach from gastric contraction, and, thirdly, to the peristaltic waves, which tend to carry the tube toward the pylorus.

1. Gorham, F. D.: Variations of Acid Concentration in Different Portions of the Gastric Chyme, and Its Relation to Clinical Methods of Gastric Analysis, Arch. Int. Med. 27: 434 (April) 1921.

These contentions have, in general, been sustained by subsequent critics,[2] although it should be frankly admitted that the current technic has furnished data of acknowledged usefulness in many cases. The fundamental objection of uncontrollable variability in fractional samples has lately been shown to apply even to the gastric residuum when the rate of acid secretion may be assumed to have been at least relatively constant for some time. Hence, Hubbard and Munford[3] of the Clifton Springs Clinic have contended that values obtained in routine gastric tests carried out in the usual manner should not be accepted as final. Duplicate studies should be made in as many cases as possible, especially in those in which the results do not correspond with the ones the physician expects from the clinical findings.

It would be undeniably advantageous if additional evidence could be secured by independent methods regarding the secretory functions of the stomach in patients about whom doubt may exist. Bence-Jones was the first to call attention to a decrease in the acidity of the urine after meals; and this phenomenon, frequently referred to as the "alkaline tide" of the urine, has been associated by various investigators with the secretion of hydrochloric acid by the stomach. From a theoretical standpoint the "alkaline tide" has been looked on as a manifestation of the neutrality regulation of the organism: when acid factors are withdrawn from the blood through gastric secretion, a compensating excretion of alkali by the kidneys may be expected to avert undue accumulation of basic ions in the blood.[4] Last year, Hubbard, Munford and Allen[5] presented anew a detailed study of the problem. To them the evidence from experiments that show an absence of the alkaline tide in cases with failure of the stomach to secrete hydrochloric acid; from the presence of two alkaline tides in most of the subjects investigated; from the absence of the morning tide when no nourishment was taken into the stomach; from the resemblance between the intensity of the tides following different types of breakfast and the reported effect of similar diets on gastric secretion, seems to indicate that the secretion of hydrochloric acid by the stomach is an important, if not the most important factor in producing these variations in the acidity of the urine.

More recently, in the hope of applying the study of the "alkaline tide" to clinical diagnosis in gastric disorders, Hubbard and Munford[6] have made further observations on cases of outspoken achlorhydria. Variations in the reaction of the urine have been compared with the results of fractional gastric analyses. The average values showed that definite changes in the reaction of the urine, commonly known as the alkaline tide, were present in specimens from patients who secreted more than minimal amounts of hydrochloric acid in the gastric juice, but that no such changes were found when the stomach contents contained little or no acid. Hubbard and Munford frankly admit that the presence or absence of the tide cannot be taken as the final proof of the presence or absence of hydrochloric acid in the stomach, because the results of the two analyses do not agree perfectly, because an absence of the tide can be demonstrated in cases in which acid is present in greatly reduced amounts, and because the urine acidity is influenced by some factors, such as changes in the respiratory rate and, possibly, kidney damage, which are not connected with the gastric secretion. The criteria for the tide selected by them were as follows: After a selected test meal, if any specimen was more alkaline than one collected earlier in the test by 1 $p_H$ or more, or if any two were more alkaline by 0.5 $p_H$, it was considered that a tide was present. There are obvious shortcomings to such a diagnostic program. Nevertheless, its authors believe that the method should prove useful in studying gastric cases in which direct analyses cannot be obtained, and in checking results showing low concentrations of acid in the gastric juice, for they state that the agreement between the two methods is good if not perfect, and the factors that influence the reaction of the urine are very different from those which sometimes render the values obtained in fractional gastric analysis uncertain.

2. Wheelon, H.: Relation of Gastric Content to Secretory and Motor Functions of the Stomach, Arch. Int. Med. **28**: 613 (Nov.) 1921. Kopeloff, Nicholas: Variations in Aliquot Fractions of Gastric Contents, Proc. Soc. Exper. Biol. & Med. **19**: 154, 1922; Arch. Int. Med. **30**: 118 (July) 1922. White, F. W.: Simultaneous Variation in Acidity of Different Portions of the Gastric Contents, J. A. M. A.: **79**: 1499 (Oct. 28) 1922. Lockwood, B. C., and Jacobson, H. J.: A Comparison of Successive Aspirates of the Gastric Contents, New York M. J. **115**: 693 (June 7) 1922. Friedenwald, J.; Gantt, W. H., and Morrison, T. H.: Studies in Fractional Analyses, Ann. Clin. Med. **2**: 292 (March) 1924.

3. Hubbard, R. S., and Munford, S. A.: Variations in the Acidity of Different Parts of the Gastric Residuum, J. A. M. A. **84**: 1565 (May 23) 1925.

4. Wilson, D. W.: Neutrality Regulation in the Body, Physiol. Rev. **3**: 295 (July) 1923.

5. Hubbard, R. S.; Munford, S. A., and Allen, E. G.: Gastric Secretion and the "Alkaline Tide" in Urine, Am. J. Physiol. **68**: 207 (April) 1924.

6. Hubbard, R. S., and Munford, S. A.: The Alkaline Tide in Achlorhydria, Arch. Int. Med. **35**: 576 (May) 1925.

7. Hardiker, S. W.: The Action of Quinine on Protein Metabolism, Respiratory Exchange and Heat Function, II, J. Pharmacol. & Exper. Therap. **25**: 175 (April) 1925.

## *Current Comment*

### THE ACTION OF QUININ

Quinin has long had some vogue as an antipyretic. It has been given a rather unusual rating among the fever-allaying drugs because of the belief that it acts not merely by depressing the heat-regulating centers but also by decreasing heat production. We are told, for example, in the Pharmacology of Useful Drugs, that quinin "causes a diminution in the amount of heat formed in the body through its lessening metabolism by its action on muscles and glands." For the febrile patient treated with this drug, some advantage might accrue from prevention of the undue loss of protein that the heightened tissue breakdown is believed to bring about in fevers. Recently Hardiker[7] has reviewed critically some of the previous contributions

on this subject and showed that their value is largely negated by the large and toxic doses of quinin used in the experiments, while in some cases fundamentally unsound methods were used in the investigation of the metabolism and heat production following the administration of the drug. His own tests, made in the department of pharmacology at the University of Edinburgh, indicated conclusively that it is not possible through quinin therapy in nonmalarial febrile conditions to lessen materially the waste of energy or the destruction of body tissue. Of course, its effectiveness in malaria is not questioned. In that malady, however, the drug acts primarily against the causative micro-organism. Under other circumstances the antipyretic action of quinin is central rather than peripheral, in harmony with the behavior of other agents in the same class.

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## ASYNCHRONISM OF THE RIGHT AND LEFT HEART BEATS

"What we designate as a heart beat begins with a simultaneous contraction of the two auricles followed by the simultaneous contraction of the two ventricles." [1] This statement of the textbooks is seldom questioned. At present an almost universal conviction holds that the two sides of the heart begin and end their ejection quite concordantly. It was inevitable, however, that this "belief" should sooner or later be subjected to critical consideration. The technic of the measurement of the duration of events in the cardiac cycle has experienced noteworthy improvements in recent years. Photographic methods of recording the changes with a minimum of instrumental error have been introduced; and electrocardiography has permitted the detection of extremely small changes in the heart's condition. Furthermore, recent studies have thrown light on the pathways of the conduction and the spread of excitation through the tissues of the heart, even suggesting that this process need not occur at exactly synchronous periods on the two sides of the organ. These considerations may serve to prepare us for the recent finding of Katz [2] at the Western Reserve University School of Medicine that, contrary to the usual tacit assumption, the right and left ventricular systoles and also their ejection phases neither begin nor end simultaneously, and as a rule are of unequal duration. The inequalities involve one or two hundredths of a second at most, yet they are measurable. It seems likely that unequal initial tension and arterial resistance changes in the two ventricles are of importance in determining the duration of the contraction process in the right and left ventricles. In addition, however, other factors as yet not understood must be taken into consideration. From Katz's studies it follows that changes in one ventricle do not necessarily indicate the changes in the other. The two ventricles must be considered separately, and the presence of an asynchronism at the onset and end of right and left ventricular contraction borne in mind when fine analyses of cardiovascular phenomena are made. There are also indications that the beginning and end of systole occur sooner in the right auricle than in the left. According to Katz there is a clinical interest in his new findings since, to quote his own words, they give a hint that in such conditions as aortic stenosis, aortic insufficiency and marked arterial hypertension the two ventricles may not be acting synchronously but that such variable relations of right and left sided contractions as are found on aortic compression in animals may readily occur. Again, he adds, the circulatory effects produced by mitral stenosis, emphysema, congenital pulmonary stenosis and similar conditions may possibly produce such types of asynchronism as were found on compression of the pulmonary artery and extreme lung inflations. They offer, in addition, a simple rational explanation for the occurrence of several clinical signs, among which may be mentioned the split second heart sound, which is heard fairly frequently, and the occasional occurrence of such a splitting during only one portion of the respiratory cycle. Accordingly, the partnership that the two sides of the heart have so long had in the imagination of physiologists must apparently be dissolved.

1. Howell, W. H.: Textbook of Physiology, Ed. 7, Philadelphia, W. B. Saunders Company, p. 537.
2. Katz, L. N.: The Asynchronism of Right and Left Ventricular Contractions and the Independent Variations in Their Duration, Am. J. Physiol. 72: 655 (May) 1925.

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## ASCARIASIS

Both man and the pig may harbor a species of intestinal roundworm, *Ascaris*, that seems to be essentially the same organism, whatever its host may be. The human *Ascaris lumbricoides* is now usually looked on as a variety of the species that occurs in hogs in almost every country in the world and is sometimes known as *Ascaris suilla*.[1] This conclusion has been fortified by morphologic, serologic and toxicologic evidence. However, it should be possible to test the alleged identity of the human and swine alimentary parasite by attempts at implantation. This has been done on various occasions, most recently by Payne, Ackert and Hartman.[2] Infective eggs of the pig *Ascaris* were ingested by monkey and man, and eggs from the human species by pigs. The experimental results indicate that embryonated eggs of the human *Ascaris* will not produce mature ascarids in pigs, that infective eggs of the pig *Ascaris* will not produce mature ascarids in the adult primates—monkey and man—and that there is thus a physiologic difference between the human and the pig *Ascaris*. It is not easy to explain such subtle distinctions or to determine how the differentiation has arisen. Perhaps it has resulted from the unlike food that is offered by the two types of intestinal habitat. There is a practical value in the evidence that the pig and man are presumably not reciprocal hosts for the same species; for until there are more cogent indications to the contrary, the control of intestinal ascariasis in man will not require changes in the present methods of raising pigs in countries where sanitary innovations are not so easily inaugurated.

1. Chandler, A. C.: Animal Parasites and Human Disease, New York, John Wiley & Sons, 1922.
2. Payne, F. K.; Ackert, J. E., and Hartman, E.: The Question of the Human and Pig Ascaris, Am. J. Hyg. 5: 90 (Jan.) 1925.

### EDDYITES OPPOSE MEDICAL EXAMINATION OF MOTORISTS

"Organized Medicine Looking to Motorists for Revenue": thus the *Monitor*, the daily published by the followers of Mrs. Eddy. It seems that the mouthpiece of this cult is opposed to the recommendation of the American Medical Association's Committee on Physical Standards for Drivers of Motor Vehicles. This committee urged that every person driving a motor car should be required to present evidence of good eyesight, such evidence to consist of a certificate from a reputable physician who has tested the vision of the individual. It is perhaps logical that a cult that declares that "the human mind and body are myths" should view with equanimity the appalling toll of life taken by automobiles in this country. Presumably Eddyism—officially at least—does not recognize the reality of errors of refraction, yet it is not among the least amusing things in this drab world to note the number of persons in any Eddyite church who wear glasses.

## *Association News*

### BOUND VOLUME OF TRANSACTIONS FOR SECTION ON RADIOLOGY

This year the Section on Miscellaneous Topics was devoted to papers on radiology. The Council on Scientific Assembly established a permanent Section on Radiology, which will begin its regular sessions next year. In order that those interested in radiology may have available in a bound volume the proceedings of this year's session, it has been determined to publish a volume of Transactions of the Section on Miscellaneous Topics. These will be available to those who attended the session, and to all others who are interested in radiology, at $1.50 per copy. Orders should be sent to the American Medical Association, 535 North Dearborn Street, Chicago, specifying Transactions of the Section on Miscellaneous Topics—Radiology—1925.

## *Medical News*

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

### CALIFORNIA

**Professional Building.**—An organization composed entirely of physicians and dentists has erected an eight story office building in Pasadena which will be ready for occupancy, July 1, and be known as the Professional Building. All space in the building has been rented on ten year leases.

**Skigerowsky Abachi.**—The secretary of the state board of medical examiners reports that Skigerowsky Abachi is supposed to have been in business for some time in Los Angeles ostensibly manufacturing handkerchiefs. It was found recently that he displayed on the wall of his reception room an imposing diploma which had been issued by the "National Physicians and Surgeons College of Microbiology," dated Chicago, Feb. 2, 1925, and signed T. D. Hyland, M.D., President, and P. Tempone, M.D., Secretary. The diploma conferred on Abachi the degree of doctor of bacteriology. Neither Hyland's name nor that of Tempone is in the American Medical Directory.

**American Association for Medical Progress.**—At a public meeting in Santa Barbara, June 8, it was unanimously agreed by an audience of several hundred people to organize the Santa Barbara County Branch of the American Association for Medical Progress. At the organization meeting, Mr. Benjamin C. Gruenberg, New York, managing director of the American Association for Medical Progress, and Dr. Walter C. Alvarez, San Francisco, gave addresses. George E. Coleman, the president of the Santa Barbara County Branch, had previously obtained the support of the county medical society and many prominent laymen. This is an organization of laymen whose object is to disseminate authentic information regarding the fundamentals of modern medicine, including methods of research.

**Patent Office Methods Aid Quackery.**—The secretary of the state board of medical examiners relates in *California and Western Medicine* some difficulties encountered in enforcing the medical practice act when advertising Chinese "doctors" are concerned. Recently the board's attention was called to such advertisements as those of "Dr." Woo, "Dr." Chow and "Dr." Lau Yit Cho, and a certain herbalist was charged with the illegal use of the title "Dr." It was impossible to identify the herbalist as the person who signed the advertising contract in this case. The prosecution therefore collapsed. This frequently occurs because the Chinese attendants in the "doctors'" offices change frequently, or at least change their names. Chinese herbalists seldom give the same name when arrested the second time. A Chinese herbalist of Oakland "brought to trial for violating the medical practice act produced letters patent from Washington to show that he had been issued a patent on his name thereby claiming legal authority to use the prefix 'Dr.,' although it was prohibited by law in California." Another difficulty is the lapse of time between the filing of complaints against herbalists and the first hearing before the justice or judge. The attorney for the defense frequently secures delays in the hope that witnesses will disappear. The records of the state board of examiners for 1921 show charges against fifty-four Chinese herbalists for violations of the medical practice act in northern California and that twenty of them were dismissed, while in southern California among fourteen arrested only one was dismissed.

### COLORADO

**Dr. Hubert Work Honored.**—Dr. Hubert Work, Secretary of the Interior, and former President of the American Medical Association, delivered the commencement address at the University of Colorado, June 15, on which occasion he received the degree of doctor of laws.

**Dean Meader Resigns.**—Dr. Charles N. Meader, for ten years dean of the University of Colorado School of Medicine, Denver, has resigned to devote his time to private practice, and Dr. Maurice H. Rees has been appointed to that position. Dr. Meader will be dean emeritus and continue as head of the department of medicine. Dr. Rees is a graduate of Monmouth College, Ill., master of arts (University of Illinois), a doctor of philosophy (University of Chicago) and doctor of medicine (Washington University School of Medicine, St. Louis). He has been associated with the University of Colorado School of Medicine, since 1921, and for the last year has been assistant dean.

### DISTRICT OF COLUMBIA

**Investigation of Pure Food Law.**—Dr. Harvey W. Wiley, for many years chief chemist of the Department of Agriculture, called at the White House, June 6, to discuss with the President the enforcement of the Pure Food Law. He is reported to have said that orders issued by secretaries of agriculture since 1907 have nullified the provisions of the Pure Food Law and had the effect of legalizing acts prohibited by the law. He stated that orders of the secretaries of agriculture permitted the use of sulphur dioxid, the sulphates, benzoic acid and benzoates, that alum was again being used in baking bread, and that caffein is being used in beverages.

### GEORGIA

**Lecture to Railway Employees.**—The state board of health arranged a special meeting of male employees on the Brunswick Division of the Atlanta, Birmingham and Atlantic Railway Company at Fitzgerald recently, which was addressed by William H. Gillette, U. S. Public Health Service, on "Sex Education and Venereal Diseases." The company provided free transportation, issuing 600 passes. There were 1,200 present and 300 turned away, according to the U. S. Public Health Service.

**University Extension Clinics.**—The third extension clinic of the Medical Department of the University of Georgia was held at Arlington, June 10, by three members of the faculty. Twenty-five physicians from Early, Miller and Calhoun counties attended. The morning was devoted chiefly to diabetes, the afternoon to children's diseases. These clinics are held to bring to physicians the newer developments in medicine. Previous clinics, held at Athens and Cordele, have been well received. Ten invitations from other counties for clinics next year are on file at the university.

## ILLINOIS

**Personal.**—Dr. Thomas A. Mann resigned, May 23, as health officer of Morgan County.——Dr. Frank E. Smith, Decatur, has been appointed chief surgeon of the Wabash Railway.——Dr. L. C. Murphy will take up his duties as head of the pathologic laboratory at the Decatur and Macon County Hospital, Decatur, July 1, to fill the position formerly held by Dr. Bartlett C. Shackford, who resigned some months ago to go to Los Angeles to accept a laboratory position.

**Hancock County Chiropractors Quit.**—A representative of the state health department visited Hancock County in May, and ordered the chiropractors to stop practice. They all complied, it is reported, except H. E. Puckett, La Harpe, a chiropractor by the name of Hawkinson at Warsaw, and Delbert Reich, Hamilton. Puckett and Hawkinson were found guilty, June 6, on a charge of practicing medicine without a license and were fined $100 and costs. Reich pleaded guilty to a similar charge and was fined a similar amount.

**Heart Disease in Illinois.**—In the last twenty years the mortality from heart disease in Illinois has increased 145 per cent. The number of fatalities in 1902 was 4,491 and in 1923 it was 11,989. The rate per hundred thousand of population increased from 90 to 176 during the same period, and heart disease has moved from the third place on the list of causes of mortality at the opening of the century to first place. According to the state department of health, heart disease takes nearly two lives to each one of its nearest competitors.

### Chicago

**Personal.**—Dr. Karl K. Koessler was recently elected president of the American Association for the Study of Allergy.——Dr. John M. Dodson, executive secretary of the Bureau of Health and Public Instruction of the American Medical Association, received the honorary degree of doctor of science from the University of Wisconsin, Madison, June 22.

**Hospital News.**—The cornerstone of the new Mount Sinai Hospital building at California Avenue and Fifteenth Place was laid, June 14.——The new diagnostic laboratories of St. Luke's Hospital, which are on the eighteenth floor of the new building, opened, May 15, in charge of Dr. Edwin F. Hirsch.——The corner stone of the new Augustana Hospital, Garfield Avenue and Sedgwick Street, was laid June 21. Among the speakers at the ceremony were Dr. Albert J. Ochsner, Gottfred Nelson and L. G. Abrahamson.

## IOWA

**Annual Renewal of License to Practice.**—Every person licensed to practice medicine and surgery in the state of Iowa must now renew his license annually and pay a renewal fee of $1. Section 2447 of the 1924 code requires that every license to practice a profession after the thirteenth day of June following the date of issue of last license shall be renewed on application without examination, and every renewal must be displayed in connection with the original license. The application for renewal must be made in writing to the department of health, accompanied by the fee, at least thirty days prior to the expiration of the license.

## LOUISIANA

**Tulane Honors Alumni.**—The Tulane University conferred the honorary degree of doctor of laws, June 10, on Dr. Warren S. Bickham, '87, New York, and Dr. Frederick W. Parham, '79, New Orleans.

**Parish Bans Liquor Prescriptions.**—An ordinance becomes effective, August 1, in Rapides Parish which prohibits the issuing of prescriptions for liquor by physicians, under penalty of not more than $500 in fine or imprisonment for not more than six months, or both, at the discretion of the court.

**New Orleans Board of Health.**—The medical personnel of the new board of health of New Orleans comprises Dr. William H. Robin, superintendent; Dr. Frank R. Gomila, secretary, and Drs. Percy L. Querens, Theodore F. Kirn, Joseph F. Chretien, Joseph G. Stulb, Francis J. Kinberger, Abraham L. Metz and William H. Seemann.

**Hospital News.**—The board of administrators of Charity Hospital, New Orleans, announced, May 18, the purchase of an entire block adjoining the hospital, for about $156,000, as a site for the John Dibert Memorial Hospital. Construction will begin within two months. The hospital will be exclusively for tuberculosis cases and will have a capacity of 178 beds.——Dr. B. F. Gallant, New Orleans, recently sold his private hospital at Pass Christian to J. N. Dickinson, Jr., Chicago.

## MARYLAND

**Child Health Conferences.**—The "Child Health Special," an automobile fitted up by the state health department to conduct health conferences for children under school age, has "taken to the road" for this season and will be out until late in the fall. A provisional schedule has been arranged for conferences varying from a few days to three weeks in a county. These conferences will supplement the regular health conferences for mothers and young children, which will go on as usual in the rest of the state. No medical treatment of any kind is given, and the family physician is notified by letter of the findings at examinations made at the conference.

**Evergreen Hospital Closed.**—Evergreen, former hospital and rehabilitation center for blind veterans of the World War, closed June 1. The last veteran left the institution May 27. About one half of all American troops who suffered from eye wounds or impairment of eyesight during the World War as a result of trench warfare, it is reported, were treated at Evergreen. Mrs. T. Harrison Garrett lent her estate on Charles Street Avenue for this purpose in 1917, together with the use of Evergreen, Jr.; in 1918, the government started constructing frame buildings at a cost of $300,000; it was turned over to the Red Cross in 1919, and the Veterans' Bureau has been operating the hospital since June, 1922.

**Personal.**—Adolph H. Schultz, research associate, department of embryology, Carnegie Institute of Washington, has been appointed associate professor of physical anthropology in Johns Hopkins University. The appointment marks a new departure for the university. Dr. Schultz will be the first scientist to conduct research and instruction in physical anthropology. He will be associated with the department of anatomy of Johns Hopkins Medical School.——Dr. John S. Davis, of the Johns Hopkins Hospital surgical staff, Baltimore, was awarded the honorary degree of master of arts by Yale University, June 17.——Dr. Benjamin Woodward Hazell, Baltimore, was elected president of the International Association of State Boards of Examiners in Optometry at their convention recently in St. Louis.——Dr. Henry L. Whittle has been appointed pediatrician of the Baltimore City Health Department, a position recently created.

## MICHIGAN

**Vacation Dangers.**—The state board of health reports that 1,426 deaths from accidental drowning have occurred in Michigan during the last five years, an average of 285 per year. The number last year was 307.

**Migdalski's License Revoked.**—The license to practice medicine of Dr. John F. Migdalski, Detroit, was revoked by the state board of registration in medicine, June 10, he having been found guilty of unprofessional conduct and offenses involving moral turpitude. It is reported that Migdalski was arrested four times within a year, and not long ago he was fined after pleading guilty to a charge of assault and battery.

**Toxin-Antitoxin in Detroit Schools.**—During the last four years, the Detroit Department of Health has offered toxin-antitoxin to school children in the kindergarten and first grade. In the first year of this period 6,167 children completed the course of treatment, and last year 8,612 children completed the course. During the entire four years, 20,448 children have completed the treatment. There were 334 deaths from diphtheria in Detroit in 1921, and 162 in 1924.

**Opinion on Excluding Chiropractors from Hospital.**—In response to a request, the city attorney of Jackson filed an opinion with the city clerk, May 18, concerning the exclusion of chiropractors from practicing in the municipal hospital. He said in part that to permit chiropractors to practice in the Foote Hospital would present an insurmount-

able administrative difficulty, and that it lies within the sound discretion of the city commission, sitting as a board of health, to regulate the management of the Foote Hospital and to exclude chiropractors or any other system of healing not generally approved and recognized.

## MISSISSIPPI

**Fewer Deaths from Malaria.**—According to the state board of health, there was a reduction of 37 per cent. in 1924 in the number of deaths due to malaria over 1923. This was due largely, it is said, to the educational campaign, to malaria control work and to dry weather, which reduced the number of mosquitoes. The leading cause of death was tuberculosis, which caused 1,840 deaths, then heart disease (1,751) and kidney disease (1,500). Six diseases and senility were responsible for 46 per cent. of all the deaths.

## MISSOURI

**Personal.**—Dr. George Hogeboom has been appointed city physician of Springfield to succeed Dr. John W. Williams, Jr., resigned.——Dr. Leo Loeb, professor of pathology, Washington University School of Medicine, St. Louis, has been elected a foreign member of the Deutsches Zentralkomitee zur Erforschung und Bekämpfung der Krebskrankheit, at Berlin. ——Dr. Joseph F. Bredeck, tuberculosis controller of St. Louis, has resigned and will go to Europe for about two years to study tuberculosis work. Dr. Bredeck was guest of honor at a lecture, May 15, given by the St. Louis Tuberculosis Society.

## NEBRASKA

**Business Men Inspect Medical College.**—Dr. Irving S. Cutter, retiring dean of the University of Nebraska College of Medicine, and his successor, Dr. John J. Keegan, entertained the directors of the Omaha Chamber of Commerce and the Greater Omaha Committee at luncheon, June 8, at which time the guests inspected the medical college.

## NEW JERSEY

**Smallpox in New Jersey.**—During the first four months of 1925 there were 118 cases of smallpox in New Jersey, with thirty-nine deaths, a mortality rate of more than 33 per cent. of the cases. During 1924 there were 340 cases with fifteen deaths, a mortality rate of any 4.5 per cent. All but two of the 118 patients had either never been successfully vaccinated or not within the last seven years; of the two who had been vaccinated within seven years, one had a mild case and the other, the virulent type. The recovery of both was uneventful.

**The Increase of Rabies.**—The state department of health reports that no section of the state has been free from rabies during the last year and that more than twice as many animals were received for examination for the year ending June 30, 1924, as were received during any previous year. Of the 226 specimens, 55 per cent. were found infected. These figures do not include examinations made at other laboratories. Between 250 and 300 persons were obliged to take the Pasteur treatment for rabies in New Jersey during 1924, owing to bites of rabid dogs. A bill introduced in the last legislature providing for the inoculation of dogs against rabies failed to be enacted.

## NEW YORK

**St. Luke's Hospital in the Country.**—A gift of $1,000,000 and 200 acres of land at Greenwich, Conn., by Mrs. Harriet M. Arnold, to build and endow a hospital for convalescents in the country, was announced by the president of St. Luke's Hospital, June 16. The hospital managers hope eventually to have $10,000,000 in buildings and equipment on the site.

**Goiter Decrease in Rochester.**—The health officer of Rochester, Dr. George W. Goler, reports that the city of Rochester iodizes its public water supply for three weeks twice a year, in May and October, and that a survey of the school children after this practice had been followed for two years showed that the incidence of goiter had decreased 54 per cent.

**Children's Home Dedicated.**—The Ernest Bliss Memorial Home at Whitestone, which will be used as a summer home for children of New York's tenement districts by the Little Mothers' Aid Association, was dedicated, June 18. The building is on the shore of Long Island Sound, on a 19 acre wooded tract. The property cost about $186,000 and will accommodate fifty-five patients.

**Public Lectures on Venereal Disease.**—The state department of health has arranged five special lectures to be given throughout the state. Since 1919 there have been given in various New York communities, exclusive of New York City, almost 4,000 lectures in sex education and venereal disease prevention with an attendance of about a half million persons, and there have been distributed more than 3,000,000 pamphlets.

**Druggists Dislike Dispensing Liquor.**—A resolution opposing the sale of liquor in drug stores as at present permitted by the Volstead Act was adopted by the New York State Pharmaceutical Association in convention at Niagara Falls, June 18, by a vote of 120 to 80. The association urged an amendment of the prohibition law so as to provide for the establishment of government dispensaries to distribute liquor for medical purposes.

**First Professor of Nursing Retires.**—Miss Adelaide Nutting, said to be the first nurse to be elected to a chair in a university faculty, retired, July 1, after eighteen years' service as professor of nursing in Teachers College, Columbia University. Miss Nutting was formerly superintendent of nursing at Johns Hopkins Hospital, Baltimore. She was a leader in interesting the trustees of Teachers College in establishing courses in nursing and hospital economics.

### New York City

**Child Hygiene Personnel Increased.**—It was announced at the annual meeting of the Children's Welfare Association at the Academy of Medicine, May 7, that the Board of Estimate authorized, May 2, the appointment of eleven medical inspectors, eight dental hygienists and seventeen nurses as additional personnel for the Bureau of Child Hygiene.

**Standards for Medical Care.**—Representatives of convalescent homes and social agencies held a conference, June 4, at the Academy of Medicine. The report of the academy's public health committee on standards of medical management of convalescent homes was approved. Dr. Charles L. Dana, chairman of the public health committee, presided. The reports of four subcommittees on convalescent care of surgical, medical, neurologic and child patients were presented also. The hospital information bureau of the United Hospital Fund, New York, was designated as the central reference office for the further study of problems having to do with convalescence.

## NORTH CAROLINA

**Two Hundred and Ten Physicians Take Postgraduate Work.**—Two hundred and ten physicians in North Carolina enrolled for the postgraduate medical courses which are being given throughout the state under the auspices of the extension division of the University of North Carolina (THE JOURNAL, May 2, p. 1365, and April 11, p. 1129).

**Hospital News.**—Mrs. Edith Vanderbilt has tendered a plot of land at Asheville, adjoining the Biltmore estate, for the site of a hospital, to be built by the Shriners for crippled children. The site is valued by local realtors as in excess of $100,000.——Announcement is made that the Rutherfordton Hospital has been transferred to the county in trust. The transfer makes it eligible for endowment. Drs. Henry Norris and Montgomery H. Biggs will continue to operate it.——Drs. William R. and Mark A. Griffin, proprietors of Appalachian Hall Sanatorium, Asheville, have purchased 77 acres of land south of Biltmore, on which it is planned to construct a new sanatorium building to cost $200,000.

## OHIO

**Health Officer Removed.**—Dr. Martin F. Vereker, health officer of Hamilton, was removed from office, June 10, following the adoption of a resolution by a majority of the state board of health. The resolution was introduced by Dr. Anderson L. Smedley, a member of the board and a former city health officer. The charge against Dr. Vereker was, it is reported, that he practiced medicine in addition to his regular duties, contrary to a recent resolution of the board.

**Society News.**—Dr. James H. Hutton, Chicago, addressed the Summit County Medical Society at the People's Hospital, Akron, June 2, on "Ovarian Disturbance in General Practice from an Endocrine Standpoint."——Dr. Dean Lewis, Chicago, will address the staff of the McKitrick Hospital, Kenton, July 9, to which meeting the surrounding county medical societies will be invited.——Dr. John C. Oliver, president of the Cincinnati Academy of Medicine and emeritus professor

of surgery, University of Cincinnati College of Medicine, addressed the Greene County Medical Society, June 4.

**Majority of Deaths Due to Six Diseases.**—Ohio had a lower death rate in 1924 than in any other year since the bureau of vital statistics was established (1908). The rate in the rural districts of the state was 10.9, and in the urban districts 11.4. More deaths occurred in March than in any other month; the least number occurred in August. The infant mortality rate was 66.6 per thousand births reported. Six diseases were responsible for 56 per cent. of all the deaths reported: diseases of the heart, 10,544; cerebral hemorrhage, 9,090; cancer, 5,922; pneumonia, 5,706; tuberculosis, 5,060; chronic interstitial nephritis, 4,939. These diseases in 1923 caused 54.3 per cent. of all deaths in the state; all except tuberculosis showed an increase in 1924.

## PENNSYLVANIA

**Personal.**—Dr. Walter A. Lathrop, superintendent of the Hazleton State Hospital for the last twenty-eight years, was guest of honor at a dinner given by the lower branch of the Luzerne County Medical Society, Hazleton, May 20.——Dr. Joshua E. Sweet of the University of Pennsylvania School of Medicine delivered the annual oration in medicine at the annual meeting of the Ohio State Medical Association, Columbus, on "Medical Research and Medical Practice."

**Harrisburg's Health Federation.**—The Dauphin County Medical Society plans to establish an organization to be called the Harrisburg Health Federation which, it is said, will have as component organizations a tuberculosis society, a heart society, a cancer society, a mental health society, a child welfare and other societies. The object is to comply with recommendations of the American Medical Association, endorsed by the state society, to establish various clinics and to prevent a multiplicity of societies and duplication of work. The society seeks to coordinate all the hospitals and clinics of the community as centers for medical education and to extend their educational facilities to physicians interested.

### Philadelphia

**Portrait Presented to Jefferson Medical College.**—A portrait of William Harvey, discoverer of the circulation of the blood, painted by Van Dyck, has been presented to Jefferson Medical College by Dr. J. Ackerman Coles, Newark, N. J., in memory of his father. It was a treasured possession of Oliver Wendell Holmes, who for years was professor of anatomy at Harvard Medical School, Boston. Dr. Coles was his father's associate in the practice of surgery. Some years ago he presented to Jefferson two rare volumes—a first edition of the complete works of Hippocrates, published by Samuel Choner in Geneva in 1657.

## TENNESSEE

**Personal.**—Dr. William D. Haggard, Nashville, President of the American Medical Association, addressed the Tennessee State Medical Association at its ninety-second annual session, Nashville, April 21, on "Periodic Health Examination and the American Medical Association."——Dr. George K. Carpenter, Nashville, has resigned as resident physician at the Nashville General Hospital.——Mr. T. T. Murray of the City Hospital, Saskatoon, Saskatchewan, Canada, has been appointed superintendent of the Knoxville General Hospital.

## WASHINGTON

**New State Health Officer.**—The governor has appointed Dr. Albert E. Stuht, Spokane, state health commissioner, effective July 1, to succeed Dr. Paul Turner. Dr. Stuht was county health officer at Spokane for six years and the resident director of the Edgecliff Tuberculosis Sanitarium.

## WEST VIRGINIA

**State Medical Election.**—At the fifty-eighth annual meeting of the West Virginia State Medical Association, Bluefield, June 9-11, Dr. James R. Bloss, Huntington, was elected president; Drs. Richard O. Rogers, Bluefield, Henry C. Skaggs, Montgomery, and Delivan A. MacGregor, Wheeling, vice presidents; Dr. Hugh G. Nicholson, Charleston, treasurer, and Sterrett O. Neale, Charleston, executive secretary. The association added a new standing committee—the Professional Relations Committee; it will have charge of educational matters of general interest to the public. The *West Virginia Medical Journal* in the future will be edited by a committee comprising Drs. James H. Anderson, Marytown; Walter E. Vest, Huntington; Harry M. Hall, Wheeling; Charles A. Ray, Charleston, and Charles W. Waddell, Fairmont. Dr. Bloss, who has been the editor, will assume the duties of president of the association, January 1.

## WISCONSIN

**State Board of Examiners for the Basic Sciences.**—The last legislature created a state board of examiners in the basic sciences. The law provides that no person shall treat the sick unless he has a certificate of registration in the basic sciences and shall have recorded the same with the county clerk and complied with all other requirements of law. The law designates anatomy, physiology, pathology and diagnosis as the basic sciences, and defines "to treat the sick" as examining into the fact, condition or cause of health or disease, or treating, operating, prescribing or advising for the same, or undertaking, offering, advertising, announcing or holding out in any manner to do any of these acts for compensation, direct or indirect, or in expectation thereof. The board of examiners will consist of three lay educators, none of whom shall be on the faculty of any department teaching methods of treating the sick. No other examining board for any branch of treating the sick shall examine, license or register any applicant unless he shall present a certificate of registration in the basic sciences. However, any person who, on Feb. 21, 1925, was regularly licensed or registered in Wisconsin to treat the sick need not be registered under the basic science law. This bill passed unanimously in the senate and received only five noes in the house.

## WYOMING

**State Board of Examiners Appointed.**—Governor Ross has appointed Dr. George M. Anderson state health officer and Drs. Frank I. Furry, Cheyenne, Alexander B. Hamilton, Laramie, Herbert T. Harris, Basin, and Oliver Chambers, Rock Springs, members of the state board of medical examiners. Dr. Anderson succeeds Dr. John D. Shingle, Cheyenne.

**Personal.**—Dr. Hinkle Garst, Austin, formerly member of the Texas State Board of Health, assumed his duties of city and county health officer at Casper, May 1, succeeding Dr. Ralph J. Malott, resigned, who is to engage in private practice.——Dr. Walter H. Hassed, Powell, was recently appointed health officer for Niobrara County, to succeed Dr. M. L. Morris, resigned.

**Law on Goiter Prevention.**—A law was approved, Feb. 25, 1925, which gives the state board of health authority to make regulations for the prevention of goiter. The first section reads: "The state board of health of the state of Wyoming shall have authority to pass such rules and regulations as shall be necessary to regulate the sale of domestic salt or prescribe such manner of treatment as has been found practical to prevent goiter from becoming more prevalent among the citizens of the state of Wyoming."

## PHILIPPINE ISLANDS

**Medical Meeting at Culion.**—Dr. M. Muir, research worker in leprosy at the School of Tropical Medicine, Calcutta, recently attended the meeting of the medical board at the Culion Leper Colony. He stated, it is reported, that the leprosy encountered in India is generally more amenable to treatment than that found in the Philippines. Segregation of lepers in India is voluntary, and in the Philippines compulsory. Tuberculosis is frequently associated with leprosy in the Philippines, but in India syphilis is met more commonly among lepers.

## CANADA

**Radium Deposits Reported.**—The discovery of radium in Halburton County, Ont., is claimed by two prospectors, who have submitted samples to the Provincial Assay Office. The official finding of the mining authorities was that the specimen is "distinctly radioactive."

**Private Hospitals Must Be Licensed in Alberta.**—The last session of the legislature of Alberta passed a law requiring that private hospitals must be licensed and in case of medical and surgical hospitals and maternity homes must have a resident superintendent. The law forbids any operation in a private hospital in any place where accommodation can be obtained in a hospital approved by the minister of health,

unless the consent of the department of public health has been obtained, excepting operations of an ordinary obstetric nature.

## GENERAL

**Personal.**—Harry Foster Bain, Ph.D., director of the U. S. Bureau of Mines since 1921, has resigned, effective July 1, and been appointed chief secretary of the American Institute of Mining and Metallurgical Engineers.

**National Board Examination.**—Examinations in Part III will be conducted by the National Board of Medical Examiners in Philadelphia, June 30-July 3; New York, June 29-July 2; Portland, July 6-9, and Chicago, Minneapolis, San Francisco and Galveston, June 30-July 3.

**American Heart Association.**—The May *Bulletin* of this association contains a list of the incorporated heart societies in various states with the name of the secretary, and in smaller places, the name of the hospital and the physician in charge of the clinic. It appears that the New York Heart Association has forty-six clinics; the Philadelphia Heart Association, twenty-three; the Chicago Association for the Prevention and Relief of Heart Disease, twelve, and the New England Heart Association, Inc., eight, in Boston.

**Sterilization Laws.**—Sixteen states passed sterilization laws between March 30, 1905, and Jan. 1, 1925, according to George E. Worthington of the American Social Hygiene Association. By the latter date they had been declared unconstitutional in Nevada, New Jersey, Indiana, Michigan, Oregon, New York and Iowa, and Oregon and Iowa had reenacted laws whose constitutionality had not yet been tested. Idaho and Maine have enacted sterilization laws this year. Under the laws in operation, Jan. 1, 1921, 3,200 people had undergone operations for sterilization, and 2,500 of these had taken place in one state. Sterilization bills have been considered, it is said, by ten legislatures this year. Since many of these laws were drawn with little regard for practicability in enforcement, they have remained almost unused in all but one state.

**Society News.**—At the annual meeting of the American Climatological and Clinical Association, Washington, D. C., May 5-6, Dr. David R. Lyman, Wallingford, Conn., was elected president; Drs. Edwin A. Locke, Boston, and Lieut. Col. Earl H. Burns, M. C., U. S. Army, vice presidents, and Dr. Arthur K. Stone, Framingham Center, Mass., secretary. ——The American Electrotherapeutic Association will hold its thirty-fifth annual meeting, September 15-18, at the Hotel Drake, Chicago. There will be demonstrations of technic, an exhibit of the latest electrotherapeutic apparatus and papers by leading men in this field. The secretary is Dr. Richard Kovacs, 223 East Sixty-Eighth Street, New York City.——The American Occupational Therapy Association will hold its annual meeting at Louisville, Ky., in conjunction with the convention of the American Hospital Association, October 20-22.

**Annual Report of Rockefeller Foundation.**—The trustees of the Rockefeller Foundation administer a fund representing a per capita of $1.50 for the people of the United States; its income, raised by popular subscription, would call for a fraction over 7 cents annually per head. The foundation has four departmental agencies—the International Health Board, the China Medical Board, the Division of Medical Education and the Division of Studies. The work done in 1924, as reviewed by George E. Vincent, president of the Foundation, comprised the following:

Contributed to budgets of rural health services in 207 counties in twenty-four American states and in New Brunswick, Brazil, France and Czechoslovakia; helped show the possibilities of malaria control in thirteen American states and made malaria surveys or studies in Haiti, Porto Rico, Nicaragua, Brazil, Italy, Palestine, Queensland and the Philippines; either continued or began antihookworm work in conjunction with thirty-two states and countries in the West Indies, Central America and Mexico, South America, Europe and the Far East; kept a mobile staff on guard against yellow fever in Mexico and Central America, and at the request of Brazil joined in an attack on this disease from eleven centers along the northern coast; provided directly or indirectly fellowships for 864 individuals of thirty-three different nations; lent staff members and made minor gifts to many governments and institutions for various kinds of counsel and aid; assisted mental hygiene projects both in the United States and in Canada, demonstrations in dispensary development in New York City, the growth of antituberculosis work in France, and other undertakings in public health, medical education and allied fields; underwrote to the amount of $350,000 a plan for publishing an international abstract journal of the biologic sciences; began issuing bulletins which report progress in medical education in many countries; helped to spread internationally knowledge about medical equipment and teaching methods through surveys by staff members, commissions of scientists, visiting professors and traveling fellows; hastened developments in the medical schools of the Universities of Oxford, Cambridge, Edinburgh, Wales, Montreal, McGill, São Paulo, Hongkong and Siam, and all departments of the American University at Beirut; maintained a modern medical school and teaching hospital in Peking; aided three other medical schools and seventeen hospitals in China; helped to improve the teaching of physics, chemistry and biology in two Chinese and nine foreign institutions in China and in the government university in Siam; had a part in the development of professional training for sanitarians and hygienists at Harvard University and in schools and institutions in London, Prague, Warsaw and São Paulo; gave funds for nursing education at Yale University and in schools and hospitals in Brazil, France, Jugoslavia, Poland and the Philippines; continued to aid the epidemiologic intelligence service of the Health Section of the League of Nations, and contributed to the League of Nations' international study tours or interchanges for ninety-nine health officers from twenty countries.

## LATIN AMERICA

**Fund for Chair of Tropical Hygiene.**—The International Health Board, New York, has offered £1,000 a year for five years to establish a chair of tropical sanitation and hygiene at the Imperial College of Tropical Agriculture at St. Augustine, Trinidad.

**Society Elections.**—The Sociedad de Cirugía de Chile has elected Drs. F. Navarro, president; Caupolicán Pardo C., vice president; Alvaro Covarrúbias P., secretary general; J. L. Bisquertt and C. H. Cortés, annual secretaries, and M. Torres B., treasurer.——The Sociedad de Cirugía of Buenos Aires recently elected as foreign corresponding members Drs. Tuffier, Mouchet and Grégoire of Paris; Nové Josserand of Lyons; F. de Quervain of Berne; Leota of Bari and Gómez Ulla of Madrid.——The new board of the Sociedad de Medicina Legal de Cuba consists of Drs. A. Barreras, president; R. de Castro, vice president; M. Barroso, secretary, and J. A. Fernández Benitez, treasurer, with six other members.——The Sociedad de Obstetricia y Ginecología of Buenos Aires elected for 1925-1926 Drs. E. Belástegui, president; U. Fernández, vice president; Nicanor Palacios Costa, secretary; F. R. Pasman, director of publications; A. Caviglia, recording secretary, and A. Larguía Dávila, treasurer.——The officers of the Sociedad de Cirugía of Buenos Aires are Drs. L. A. Tamini, president; A. Zabala, vice president; O. Copello, secretary general; Delfor Del Valle, annual secretary; R. E. Pasman, director of publications; A. Galíndez, librarian; M. Viñas, treasurer, and A. Ceballos and B. Calcagno.

## FOREIGN

**Conference Bans Gas and Bacteria Warfare.**—The protocol sponsored by the United States for the abolition of poison gas warfare and supplemented by the Polish amendment to suppress bacteriologic warfare was adopted, June 10, by the general committee of the traffic in arms conference at Geneva.

**Radio Institute.**—Dr. Hertzell has founded at Bremen an institute for research on problems connected with radio and broadcasting. There are accommodations for twenty-five research workers. The main aim of the founder, who is an orthopedist, is to adapt loud speaking devices to medical diagnosis. He calls it the Institut für Radiokunde.

**Professor Fujinami's Laboratory Destroyed.**—According to *Science*, the pathologic laboratory of the Imperial University of Kyoto, of which Prof. A. Fujinami was director, was destroyed by fire, May 1, and only a few specimens were saved. Dr. Fujinami, who is well known in United States, was a member of the Japanese Medical Commission which visited this country in 1923 as guests of the Rockefeller Foundation.

**Course in Tuberculosis.**—The dean of the faculty of medicine of Strasbourg announces that a continuation course on tuberculosis will be given, October 9-24, the lectures to be accompanied by the presentation of cases, lantern slide and bacteriologic demonstrations. Students will register with Dr. Vaucher, general secretary, Association Alsacienne et Lorraine contre la tuberculose, 22 Rue de L'Université, Strasbourg. The fee is 200 francs.

**American Diplomas in the Levant.**—Nearly 300 physicians, dentists and pharmacists, representing twenty-one nationalities, will receive diplomas from the American colleges in Constantinople, Smyrna, Sofia and Beirut this month. Robert College, Constantinople Woman's College, the American University, Beirut, the International College of Smyrna and the Sofia American schools are organized and operated on the plan of the higher educational institutions in the United States.

**Expense of Health Section of League of Nations.**—Austen Chamberlin, British foreign secretary, commented on the

increasing expenses of the health section of the League of Nations at the opening session of the council in Geneva, June 8. He stated that the expenses of this section had increased from 700,000 gold francs in 1924 to 1,000,000 gold francs this year (approximately from $175,000 to $250,000) and were still increasing. He believes that the activities of the league's health section should be limited to research work and the coordination of other efforts.

**Centenary of Bilharz.**—The year 1925 is the centenary of the birth of Theodor Bilharz, who became the assistant of Griesinger, physician to the viceroy, in Egypt. Bilharz had studied under the naturalist Siebold, and in 1851 made his first report on *Distoma haematobium*, which he later declared to be the cause of cystitis, and vesical polypi. In 1852 he drew attention to the importance of *Ancylostoma duodenale* as the cause of anemia in Egypt and later made researches on the guinea-worm. He contracted typhoid at Massowah and died in Cairo in 1862, at the age of 37. His brother, a distinguished philosopher, is still living at the age of 85.

**British Medical Association Meeting.**—The annual meeting of this association will be at Southampton, August 26-September 2, when Prof. Horace Lamb will assume the presidency, succeeding Sir David Bruce. According to the preliminary announcement, among the subjects discussed will be health in schools, epidemics and dietary, the warp and woof in education, the observation of the infinitesimally small, the chemistry of solids, the physiologic basis of athletic records, the inorganic elements in animal nutrition, the teaching of biology in schools, and the acquisition of muscular skill. A series of public lectures will be given by members of the association during the meeting.

**Personal.**—On the thirtieth anniversary of his connection with the university, Dr. A. Carle, professor of surgery, Turin, was presented with a scholarship fund and a two-volume collection of scientific works dedicated to him.——Dr. C. Levaditi of the Paris Pasteur Institute has been lecturing at Madrid on "The Present Status of Vaccines," and was the guest of honor at a banquet given by the medical faculty and Spanish Dermatologic Society. He is a native of Roumania, and he recalled that Trajan's campaigns had linked Roumania and Spain.——Dr. Jeanneney, professor of surgery, Bordeaux, has been elected a member of the International Anesthesia Research Society.——Dr. U. Parodi has been appointed to the chair of pathologic anatomy, Catania, Italy. He opened the course with a lecture on "The Cancer Problem."

### CORRECTION

**Nonspecific Ulcerative Colitis.**—This abstract in THE JOURNAL (June 20, 1925, p. 1956) should have ended with the fifth line. The sixth line is the beginning of the abstract of Dr. Russell L. Haden's paper on "Elective Localization of Bacteria in Peptic Ulcer."

## *Government Services*

### Business Managers for Veterans' Bureau Hospitals

The director of the Veterans' Bureau has established a business manager in each hospital to look after the financial and economic affairs of the institution and to relieve physicians charged with the treatment of patients of executive duties. Since the Reed-Johnson Bill was enacted, permitting the bureau to open its hospitals to veterans of any war since 1897, more than 2,000 have been admitted. The Veterans' Bureau now operates forty-nine hospitals, seventy-four dispensaries, ninety-seven laboratories and 100 roentgen-ray laboratories, and houses more than 29,000 patients. In the appropriation recently made available by Congress supplementing the third Langley bill, six new hospitals and a national training school for the blind are provided for and funds made available to complete another hospital now partially constructed.

### U. S. Public Health Service

Surg. Clifford R. Eskey has been relieved from duty at Washington, D. C., and directed to report to the chief quarantine officer, Manila, P. I., for duty.——Asst. Surg. Gen. John W. Kerr has been directed to proceed from Washington, D. C., to such places in Great Britain and Ireland as may be necessary, in connection with the enforcement of the immigration acts.——Dr. Ralph D. Lillie has been promoted to the grade of passed assistant surgeon, effective May 14.——Acting Asst. Surg. R. S. Wynn has been relieved from duty at Rotterdam, Netherlands, and directed to proceed to Genoa, Italy, for duty at the American consulate.——Dr. Martin F. Engman has been directed to proceed from St. Louis to Carrollton, Ill., to examine a suspected case of leprosy.——Surg. George W. McCoy was directed, May 23, to proceed from Washington, D. C., to Baltimore to confer with officials of Johns Hopkins University concerning the health hazards of tetra-ethyl lead in motor fuels.——Surg. J. G. Wilson has been relieved from duty at Hamburg, Germany, and directed to proceed to New York City and await orders.——Acting Surg. J. Bruce Arnold has been relieved from duty at Danzig, Germany, and assigned to duty at Hamburg.——Acting Surg. J. J. Donovan has been relieved from duty at Cobh, Ireland, and assigned to duty at Danzig, Germany.——Surg. Sanders L. Christian has been directed to represent the U. S. Public Health Service at the International Congress of Tuberculosis, to be held in London, England, July 6-7 (no travel required).——Surg. Allen J. McLaughlin was directed to proceed from St. Louis to Minneapolis to attend the annual meeting of the National Tuberculosis Association, June 17-20.——Asst. Surg. Paul W. Bailey has been relieved from duty at Memphis, Tenn., and assigned to duty at the U. S. Marine Hospital No. 13, Mobile, Ala.

### Graduation at Army Field Service School

The graduation exercises of the medical field service school of the army were held at Carlisle Barracks, Pa., June 5. Twenty-eight officers of the medical corps of the regular army, one of the navy, and two of the Cuban army composed the class, one of the largest to graduate from this school. The basic course of field training given at Carlisle Barracks includes hygiene and sanitation, equipment and transportation, methods of training, administration, military history and medical tactics, map reading and sketching, and equitation. The course is usually of four months' duration and follows the postgraduate technical training given students at the army medical center. The next class at the Carlisle Barracks school will be composed of national guard and reserve officers of the medical department and is scheduled to begin, September 1, and continue for six weeks. A class of about fifty officers composed of representatives of the national guard and reserves is anticipated for this basic course. Applications for this course are now being received by army corps area officials, and those officers of the territorial assignment group who may be interested should forward their applications to the commanding officer of the corps area in which they reside; those of the branch assignment group should submit applications direct to the Surgeon General, Washington, D. C. This course is intended for officers of field grade who hold assignments to administrative positions.

### Summer Training for Army Reserve Officers

Reports received in the Surgeon General's Office indicate that at least 1,200 physicians will attend the four army camps chosen by the War Department for special training of medical reserve corps officers. It is estimated that the following number of reserve officers of the medical corps will secure training at these camps:

| | |
|---|---|
| Medical Field Service School, Carlisle Barracks, Pa. | 800 |
| Fort Snelling, Minn. | 200 |
| Fitzsimons General Hospital, Denver | 60 |
| Camp Lewis, Washington | 150 |

In addition, a number of reserve officers of the medical department will be ordered directly to active duty for fifteen-day training periods at many of the summer citizens' military training camps. The Surgeon General's Office is highly pleased that so large a number of physicians will participate.

### Navy Assigns Recent Graduates

The Secretary of the Navy has ordered forty-nine selected graduates of medical schools, recently commissioned junior lieutenants, to various hospitals to serve an internship previous to being assigned to ships. Nine physicians have been assigned to the naval hospital at New York. The navy department has arranged with certain civilian hospitals for cooperation in giving to these officers courses that cannot be provided at the naval institutions.

# Foreign Letters

## LONDON

*(From Our Regular Correspondent)*

June 9, 1925.

### Memorial to John Irvine Hunter

A meeting representative of professional and scientific bodies of the University of Sydney was held for the purpose of discussing a suitable memorial to the late John Irvine Hunter. Prof. A. E. Mills, dean of the Faculty of Medicine of the University of Sydney, who occupied the chair, said that he had received a letter from Prof. Elliot Smith expressing the desire for the cooperation of any committee formed in Australia to establish a memorial. Prof. Elliot Smith had undertaken to prepare a volume embodying Hunter's research work and his contribution to medical science. The book would also include a biography. It was hoped that a research fund would be established. It was decided that the meeting was in full accord with the home committee in the publication of a memorial volume and the establishment of a research fund. After some discussion, it was decided that this meeting was of opinion that a memorial fund to the late Professor Hunter be opened. Among the suggestions made were the following: The establishment of a fund for research in neurologic subjects or in the medical sciences, the foundation of scholarships for the assistance of necessitous students, the placing of a bust of Hunter in the medical school, the establishment of an annual oration, and the formation of a memorial library.

### The Removal of Children from Tuberculous Homes

The London County Council in recent years has given serious attention to the care of tuberculous children. Five schools, with accommodation for 365 cases, have been built to take children suffering from the disease, and there are also open-air schools for debilitated children who would probably develop tuberculosis if their health was not supervised. The council has decided to test for twelve months schemes for the removal of children from heavily infected and overcrowded homes during the terminal stage of a patient dying of pulmonary tuberculosis in the family, and for the boarding out of children who are being discharged from sanatorium treatment and whose homes are unsuitable and inimical to the maintenance of health.

### New Regulations for the Training of Pharmacists

After prolonged preparations and much discussion, the council of the Pharmaceutical Society has passed new regulations affecting the education and examination of pharmaceutic students. The entrance examination to be passed before registration as a student will be not far short of the London matriculation standard. Curiously, Latin is not a compulsory subject, an omission which has caused considerable criticism, as Latin names are commonly used in pharmacy and in prescription writing. But at his final examination the candidate is tested in the translation of Latin prescriptions. The preliminary scientific examination covers chemistry, physics and botany. Before entering for this, the candidate will be required to produce a certificate that he has received an approved systematic course of instruction in chemistry of the minimum of 200 hours, in botany of 120 hours, and in physics of 120 hours, in accordance with the syllabus. The final examination entitles the candidate to use the title of "pharmacist" and to carry on the business of a chemist and druggist. The subjects are pharmacognosy, pharmacy, pharmaceutic chemistry and forensic pharmacy. Before entering for it the candidate must produce a declaration that he has been trained under the supervision of a pharmacist in the dispensing and compounding of medicines for 4,000 hours, spread over not less than two years, in a shop or hospital dispensary; with evidence that, subsequent to sitting for the preliminary scientific examination, he has received in the subjects of examination an approved course of instruction of not less than 720 hours. For those who desire more knowledge and are ambitious for distinctions, there are the examinations for the title of pharmaceutic chemist and for the new London University degree of Bachelor of Pharmacy. The general effect of the new regulation will be to produce a more highly trained special class.

### Tuberculosis in Cattle

There has been published by the Medical Research Council an important report from its Tuberculin Committee on "Tuberculin Tests in Cattle, with Special Reference to the Intradermal Test." Part of the investigation was a study of the subcutaneous, intradermal and ophthalmic tests on eight herds of cattle, herds believed to be practically free from tuberculosis, as well as on herds heavily infected with the disease. The conclusion reached was that the intradermal test was the one most easily employed and, at the same time, gave the most consistent results regarding the presence or absence of tuberculosis in cattle. The subcutaneous test, at present chiefly relied on in this country, consists in injecting tuberculin under the skin and then taking careful temperature readings. The present study has shown that these readings are apt to mislead because of the tendency of the temperatures of cows to change under farm conditions. The intradermal test does not depend on temperature readings at all. It was originally employed for ranch cattle in America; in 1910, two Danish investigators, Christiansen and Stub, made a new study of it. The tuberculin employed in the test is an undiluted sample, which has been carefully tried on tuberculous guinea-pigs in order to verify its potency. The dose is usually 0.1 c.c. both for the sensitizing and for the test dose. A single drop is, however, sufficient in each case. The site selected is the center of the side of the animal's neck.

### Osteopathy in England

In a previous letter, the introduction of osteopathy into this country and the formation of the "British Osteopathic Association" was described. The cult, like other eccentricities, has obtained a certain amount of support and now entertains the ambition of obtaining recognition by the government and privileges such as are enjoyed by regular physicians. The help of some politicians—none of much importance—has been secured. A circular was issued by twenty-one members of Parliament inviting other members to meet the member of the British Osteopathic Association and hear an address from Dr. W. H. Macdonald of Edinburgh, one of the six registered physicians in this country who have adopted osteopathy. About thirty members of Parliament attended. The chairman said there was no recognized school of osteopathy in this country nor any board of osteopathy, with the result that the public was exposed to charlatans. At present the general medical council held that the administration of an anesthetic for a "manipulative surgeon" or osteopath was infamous conduct and rendered the offender liable to the loss of his degree. He suggested the establishment of a committee to uphold the interest of osteopaths in the House of Commons and to press for their recognition. Osteopathy could relieve or cure most diseases by insuring a good arterial and nerve supply to the tissues and by insuring that the veins and lymphatics that carried away the waste products remained freely open. It did not matter what the discoveries of the future might be in the chemical

or electrical world, the great principle of structural integrity remained, and on it osteopathy was founded. A disturbed artery determined to an hour the onset of disease. The *British Medical Journal* looked on osteopathy as a cult, but there were now more than 10,000 osteopaths. Impostors from America had founded schools of osteopathy in this country, and had issued diplomas to pupils who were now practicing. The British public should be protected from this. British physicians should be granted a diploma by the British Osteopathic Association after one year's training, for which many were anxious. The British Osteopathic Association was anxious to demand or to force the general medical council to allow anesthetists to work with registered osteopaths. The answer to all this is that if osteopaths desire the same privileges as ordinary physicians, they must obtain them by going through the same course, passing the same examinations, which places no bar on the practice of osteopathy or any other eccentricity. There is certainly no prospect of obtaining them in any other way. The tendency is to make the conditions of qualification more and more stringent.

## PARIS

*(From Our Regular Correspondent)*

June 4, 1925.

### Social Insurance Legislation

The new social insurance legislation, which was hastily passed by the chamber of deputies, is based on the German law as still applied in Alsace-Lorraine, and takes no account of French medical traditions. In a recent communication to the Academy of Medicine, M. Weiss, dean of the Faculté de médecine of Strasbourg, pointed out that the system in Alsace-Lorraine had decreased the independence and lowered the dignity of physicians; debased the quality of medical and surgical treatment, and was threatening to compromise medical instruction itself. M. Balthazard confirmed the conclusions of M. Weiss and suggested modifications in the bill. He emphasized that the French medical syndicates, which have never separated the professional interests of the physicians from the interests of the patients or from the interests of medical science, have nothing in common with the German medical syndicates or leagues of physicians, which were created solely to aid in the operation of the social insurance law. The German physician is under the domination of the medical syndicate, which is crushed by the power of the health insurance societies. On several occasions the German physicians have resorted to the strike as evidence of their dissatisfaction with the fee schedule.

It was formerly assumed that the *Kassen*, being supplied with considerable funds, would provide physicians with all the facilities of modern practice that they might need in establishing their diagnoses. Experience has taught, however, that such expectations will not be realized. The *Kassen* have only one main purpose in view: the most economical administration of affairs. The low fees that physicians receive for their visits tempt them to make more visits than are necessary and to make very short visits. Physicians can give to each patient only a few brief minutes, so that a medical examination is frequently only such in name. The *Kassen* prohibit the use of certain modes of treatment on the pretext that they are too burdensome. They reduce to a minimum the use of laboratory tests and roentgenologic examinations, and in the matter of antisyphilitic treatment they go so far as to establish a maximum of visits and a maximum of intravenous injections that may be given within a three months' period.

Again, social insurance does not take account of the right of privileged communication. Physicians are required to write out their diagnosis on sheets that are handled and viewed by all the employees in the offices of the *Kassen*. The disadvantages are such from the standpoint of the prophylaxis and the treatment of venereal diseases that the Faculté de médecine of Strasbourg has been forced to organize an antivenereal dispensary independent of the *Kassen*.

M. Weiss and also M. Balthazard hold that the system of social insurance threatens to impair the character of clinical instruction in France.

The *Kassen* use their best efforts to keep their insured members out of the hospitals, over which they exert no influence and whose charges they allege are exorbitant. The *Kassen* have encouraged the creation of sanatoriums, the economic administration of which is carried to extremes and in which the medical care and the food are in direct relation with the per diem hospital allowance granted by the *Kassen*. It is to be feared, therefore, lest the hospitals, which are the centers of clinical instruction, may not secure a sufficient number of patients, which would have an immediate retroactive effect on the quality of the medical profession.

The first and most important principle to be proclaimed is the maintenance of the direct relations between the insured and his physician, the latter being freely chosen by the patient and paid directly by the patient. Physicians who elect to treat the insured can become attached to the health insurance societies (*Kassen*) by collective contracts. According to the terms of such contracts, physicians will be required to furnish the insured with certificates which will serve them as vouchers in order to secure from the *Kassen* the cash benefits to which they are entitled and reimbursement for the medical fees calculated according to an established schedule agreed on in advance and stipulated in the contract. It is indispensable that the *Kassen* shall exercise their control over the patient himself and not over the acts of the attending physician, and that they shall demand of the latter solely a certificate of illness but not a diagnosis, so as to maintain the right of privileged communication.

The academy was urged by Professor Balthazard to adopt the subjoined resolutions, which constitute the gist of his recommendations.

In order not to constitute a retrograde movement in place of an advance, the law pertaining to compulsory social insurance must respect the following principles, which are necessary for the maintenance of the best and most useful features of French medical tradition, without which the medical profession cannot be expected to give loyal aid and support to the functioning of the law:

1. Free choice of physician by the insured, and direct relations between the physician and the insured without the mediation of the *Kassen*.
2. Absolute respect of the right of privileged communication.
3. Organized control of the insured by the *Kassen*, the attending physician refraining from all intervention except in the capacity of defender of his patient.
4. Obligation on the part of the *Kassen* to use the hospitals located in the cities that are the seats of medical schools, the hospital charges being fixed by boards of arbitration.

### The Congress of Thalassotherapy at Arcachon

M. P. Armand Delille, appointed to represent the Société médicale des hôpitaux at the congress of thalassotherapy, which was held at Arcachon, in April, has presented to the society the conclusions of his paper, read before the congress, on the pathogenesis of rickets and its treatment by sun baths and sea air. Most of the English, French and Italian essayists at the congress were agreed in regarding the absence of solar light as the essential factor in rickets. It is now known that it is the light vibrations of the left end of the spectrum, and especially the ultraviolet rays, that affect the metabolism of phosphorus and calcium. It is probable

that, in addition, solar treatment acts on the metabolism of many other substances necessary for the development of the child. By the sun baths not only is calcification of the bones brought about but also the development of the muscles is powerfully activated. Heliotherapy exerts a favorable influence also on the organism as a whole. The climate of Berck is too severe for very young children. Rachitic children are not admitted here until they are from 3 to 4 years old, at which time deformed conditions of the bones are almost incurable. San Salvador, however, a station on the Mediterranean, admits children who are only 18 months old, and the results accomplished there have been very encouraging. It would be desirable if the public charities organization would provide opportunities for sending to the seashore infants 12 or even only 8 months old, which would be quite feasible if they were not breast fed. For these young patients, caretaking centers located in the small villages along the west coast of France or along the Mediterranean might be considered.

## MADRID

*(From Our Regular Correspondent)*

May 27, 1925.

### League Against Cancer

The League Against Cancer met under the presidency of the king and queen. Among those in attendance were the French secretary of public health, labor and public assistance, and the generals who constitute the directory. The meeting was held in the new cancer institute, which is a credit both to Spain and to Dr. Goyanes, surgeon in charge. In addition to the French member of the cabinet, there came from Paris Dr. Hartmann, one of the professors in the Paris medical school, and Dr. Bandaline, and from Barcelona Dr. Martínez Vargas, president of the University of Barcelona. In spite of a special invitation to the medical profession and the attendance of many prominent persons, Madrid physicians stayed away, with the few exceptions of those belonging to the league.

Dr. Goyanes, in an address prepared for the lay public, said that fortunately in Spain the number of cancer cases is proportionally smaller than in France, England or Switzerland. By statistics collected in cooperation with the geographic and statistical institution, it has been determined that from 1900 to date there have been about 15,000 new cases every year. As a patient with cancer lives about three years, there are constantly about 45,000 cases. In one out of each ten general necropsies, cancer has already begun its inroads. Dr. Goyanes recalled that in New York the number of cancer cases already exceeds that of tuberculous patients. Dr. Goyanes complained of the inadequate means of the cancer institute. For instance, it has only 0.2 gm. of radium. Plans are now under consideration for the construction of two forty-bed pavilions, one for indigent cases, another for pay patients. The money contributed by the latter will be used for the support of the institution.

The French minister, M. Justin Godart, stated that in France they have already twenty cancer stations and they will soon have twenty-four. It is not intended to open any more, as in this way it will be possible to equip them better. The king was the last of the orators, and after praising Spanish physicians, whose will makes up to some extent for the lack of means, he promised that in the next year there will be 600,000 pesetas available for the cancer institute. Any war weapon is more expensive, the king added, and this amount will buy very powerful weapons against disease and death.

### Another Victim of Roentgen Rays

A few days after attending the meeting of the League Against Cancer, Dr. Michael García Fernandez, the roentgenologist of the cancer institute, died. Last year he had to submit to the amputation of one hand, and a few months afterward to the removal of a large number of axillary glands. Shortly before his death, he received the cross of Beneficence, which the government granted him at the request of many physicians and patients.

## NETHERLANDS

*(From Our Regular Correspondent)*

June 1, 1925.

### Prophylaxis in Epidemics in the East Indies

In a comprehensive communication presented before the Société de pathologie of Paris, on the subject of the organization of the colonial medical service in the East Indies, to prevent the bringing in of infectious diseases, M. Flu discussed the remarkable results of anticholera vaccination. Before vaccination was introduced, when an epidemic of cholera was raging at Batavia, the ports that were in communication with that city sooner or later became infected. After the decision was reached to require the vaccination of every native passenger leaving Batavia for one of these ports, the ports that had become infected remained free from infection. At the time of the cholera epidemic in Batavia in 1909, physicians declared themselves powerless to prevent the spread of the disease. In 1914, the same physicians fought the spread of the infection with enthusiasm and confidence. In 1914, within two weeks, 65 per cent. of a population of 35,000 were vaccinated. The number of cases diminished at once. Since then, the same mass immunization practices against cholera have been followed in many instances, and the same sudden check of the epidemic has been brought about. Since the first trial, the population of Batavia has been vaccinated every six months against cholera, with the result that, contrary to the usual experience, the epidemic does not reappear with the approach of the dry season, there being only a few sporadic cases to the number of from twenty to thirty. Owing to the smallpox vaccination and the cholera inoculation applied since 1913, the mortality, which was formerly so high (from 275 to 300 per thousand) among the Mohammedan pilgrims who make the long pilgrimage from the Dutch East Indies to Mecca, has been reduced to almost nil. The crusade against the plague is not so successful, for the fumigations on the loaded vessels are, the author stated, entirely ineffective. Only the disinfection of vessels the holds of which are empty furnishes any assurance that all the rats and fleas are exterminated. In the Dutch East Indies, the authorities examine very carefully the men employed to unload vessels in port, with a view to preventing the introduction of infectious diseases.

It is not necessary to institute any prophylactic measures against yellow fever, for, owing to the efficiency of the Americans, to whom the whole world, and particularly the countries formerly menaced by yellow fever, are profoundly grateful, there is perfect tranquillity in the Dutch East Indies, for the precautions taken by the United States have proved eminently successful in preventing the spread of the disease.

### Yaws in the East Indies

Yaws is one of the greatest afflictions in the way of disease with which the island of Java has to contend. It affects more particularly the plains and the low lands. The statistics of the various regions are widely different, the incidence of the malady ranging all the way from 12 to 90 per cent. Winckel has just published an interesting report on the results of the campaign against yaws by the use of two measures: a more extended employment of arsphenamin and widespread publicity. Arsphenamin is very effective, and the healing process is rapid. The authorities have called

attention to the remarkable cures secured in order to make the treatment more popular. A group of patients were treated before an assembly of civil officials, representative men among the native population, chiefs of villages, priests and others. The witnesses were asked to assemble again on a given date, at which time the patients then treated would be present for inspection. An active publicity campaign by means of posters was launched, and, for the time being, the free distribution of drugs was withdrawn, in spite of which fact the demands for treatment increased tenfold. From the beginning of the campaign up to the end of the first half of the year 1923, almost one million persons received injections.

## BERLIN

*(From Our Regular Correspondent)*

May 23, 1925.

### Congress of the German Society of Internal Medicine

#### PHYSIOLOGIC TESTS OF SENSIBILITY

The congress of the Deutsche Gesellschaft für innere Medizin was held in Wiesbaden, April 20-23. Professor von Frey of Würzburg presented the first paper, on sensation. While vision, hearing, odor and taste have long been thoroughly studied, we know less of the other senses. Since the researches of E. H. Weber, the specificity of various kinds of perception in relation to their organs has been assumed. Thus, we recognize the sense of warmth, the sense of cold and the sense of pressure, and also a sense of power or of weight inherent in the muscles is made probable. There may be other manifestations of the skin sense. In testing sensibility by irritation of minute areas, diverse kinds of perception may be localized. On the surface of the human body, 3,500,000 pain points, 500,000 pressure points, 250,000 points especially sensitive to cold, and 25,000 points particularly sensitive to heat were found, or an average, respectively, of 175, 25, 12 and 1 to the square centimeter of body surface. Bristles elicit usually only itching or pain, seldom a touch sensation, which doubtless has its seat in the deeper layers. Sensation of cold is also localized in deeper tissues than sensitivity to heat, a fact that is interpreted teleologically. Whether the deeper tissues are affected or not depends to a great extent on the area of the surface stimulated. If by means of cataphoresis certain areas are gradually benumbed, the sense perceptions are lost in a definite order and are recovered in reverse order. The pressure sense is probably conditioned by nerve plexuses of the hair-sheaths and by Meissner's corpuscles, while pain is elicited by the free nerve endings of the epidermis. It is not, however, demonstrable that sensibility is divisible into three types having their origin respectively in the pressure sense and in the surface and the deeper tissues. The decisive factor in the origin of sense perceptions is rather their association and their combination —mutability of the processes which we designate as *gestaltung*. Thus, for the sense of warmth a certain length of time is required; for pain, certain border points are needed, and for the sense of pressure we must have a certain head of pressure. Chemical irritation may elicit pain, which is localizable. The deep pressure sense postulated by Weber is unproved, since its apparent manifestations may be due to the tension of adjacent areas of skin. In the case of the sense of power or of weight (*kraftsinn*) which is inherent in the neuromuscular spindles, differences of tension play a greater part than the head of pressure. Posture sense is conditioned by the pressure sense of the skin and the power sense (*kraftsinn*) of the muscles. In agreement with this conception are the findings of Boeke in connection with the division of nerves and their regeneration. Space sense, which informs us as to the relative position of objects in space, is also the result of a combination of other senses.

From the clinical standpoint, Professor von Weizsäcker of Heidelberg discussed the disturbances of surface sensibility and of deep sensibility. The method of testing sensibility by the process of exclusion, as heretofore employed, gives us no clear idea of what the patient perceives. The fact that performances are dissociated is no direct proof of the existence of separate sensory apparatus; there may be a decomposition into functional stages occurring in the same structure. In the case of the pressure points, there is not only an objective but also a subjective sensation; for example, in the irritation of the skin by a hair to test its sensitiveness, or in handling an object to determine its identity. In pathologic disturbances there is a corresponding derangement of sense perception. Through a mere decrease of the perception points, hypesthesia may result. Equally strong perceptions of a different sort, but undetermined, may intervene. In this manner we may reach a uniform conception of the sense organs of the skin. The various senses disappear and are restored again in a definite order, which points to a change in the perceptions and not in the topographic localization, or, in other words, to a change in functioning associated with spinal disturbances. A testing of the loss of function and of pathologic conditions on the basis of this conception yielded in peripheral disturbances of conductivity a harmonious lowering of the threshold of sensibility. On the other hand, in central disturbances such as tabes, a chaotic modification of functioning was found. The afferent paths for the regulation of movements were subject to the same influence, so that ataxia develops in this second group. Also intellectual influences and central association of perceptions are important and lead to synesthesia of the senses in space sense, power sense and others. The central nervous system has less regenerative capacity but a better adaptability to change of function than the peripheral nerves.

Prof. L. R. Müller of Erlangen presented a paper on the sensibility of the internal organs, particularly the brain. Whereas the organs of the thoracic and the abdominal cavities, as well as the brain, cannot distinguish between sensations of touch, pressure, cold and heat, and the mucous membrane of the gastro-intestinal tract is not susceptible to any stimuli, contractures of the smooth musculature and stretching or expansion of the hollow abdominal organs cause severe pain. Also a deficient blood supply may elicit pains in the smooth musculature. Likewise, traction on the mesentery and on the large blood vessels is painful. The sensory nerves of the abdominal cavity are conducted by way of the splanchnic nerves and the sympathetic nerves to the spinal cord and brain. Their association with nerves of the skin gives rise to areas of hyperalgesia or Head's zones. Many visceromotor reflexes are associated with the spinal cord and lead to nausea, vomiting, and the like. In the thoracic cavity pain is elicited by the sudden contraction of the heart muscle; in ischemia (for example, coronary sclerosis); in severe contractions of the bronchial musculature (asthma), or in swallowing too large portions of food by stretching the esophageal musculature. The heart and lungs are not susceptible to mechanical and thermal stimuli. When the aorta is overdistended, the pain is conducted from the adventitia by way of the sympathetic nerve. In this connection, direct visceromotor reflexes may lead to a spasm of the intercostal muscles. Such disturbances of the heart and blood vessels may give rise to sensations of anxiety, deadly fear and a feeling of being destroyed. The brain itself is free from pain, although the dura mater becomes painful when distended but is not sensitive to cutting and to burns. The pia mater and the choroid plexus contain numerous nerve fibers. They control presumably the pressure and the secretion of the cerebrospinal fluid. Headache is always due to increased pressure of the cerebrospinal fluid, even though

it may have a toxic basis in uremia, alcohol or fever. Migraine is caused not only by vascular spasms but also by hypersecretion in the lateral ventricles. All sensation with respect to organs occurs by way of the sympathetic portion of the visceral system.

In the discussion that followed, Professor Goldscheider of Berlin, who discovered many years ago the points sensitive to heat and cold and who has contributed much to the differentiation of cutaneous sensations, emphasized that the conceptions of Frey and Weizsäcker signify a step backward. He contended that the benumbing experiment furnished no proof for the different depths of the organs of perception. Stein of Heidelberg, in disturbances of the peripheral nerves, had observed, on irritation, a lengthened state of excitement, which led to fusion of the stimuli and to disturbances of stereognosis. Experimental and pathologic disturbances of the power sense (*kraftsinn*), analyzed by Hansen of Heidelberg, were demonstrable in tabes dorsalis and in multiple sclerosis. In hemiplegia there were combined disturbances of the power sense, but in pure muscular dystrophy there were no disturbances. Katsch of Frankfort-on-the-Main emphasized the importance of the Head zones for differential diagnosis. Munk of Berlin discussed the electromotive force of the skin. He found the potential of the skin the same in all persons and equally distributed over the body. The production and distribution of electromotive force is thus an independent function of the skin, which is affected by the sudden cooling of a part of the body. Lehmann of Göttingen demonstrated by several tests that the loss of deep sensibility may have other causes than a shifting of cutaneous perceptions. By animal experiments he proved that there is deep sensibility, which passes through the anterior root.

#### PATHOLOGY AND THERAPY OF BRONCHIECTASIS

Professor Brauer of Hamburg prefers to classify bronchiectasis from a pathogenic standpoint rather than according to form. The rare, congenital types should be distinguished from the frequent, acquired forms. Among the latter, one finds many transitions from the catarrhal superficial changes of the bronchial mucous membrane to the wall infiltrations and peribronchitis, and, again, from the last mentioned conditions to the ulcerous and secondarily cirrhotic processes. Then there are types that present chronic abscesses. The assertion that the majority of cases of bronchiectasis are congenital has its basis in the fact that frequently in young persons—for instance, after measles—inflammatory processes arise the causes for which are difficult to discover. Bronchiectasis may be due to the effects of foreign bodies, to stenoses or to kinking of the middle-sized bronchi, or to bronchitis, peribronchitis or bronchopneumonia, or finally to pleurogenic processes. Bronchiectasis is also frequently a complication of tuberculosis, but a secondary infection by other acid-fast bacilli is to be considered. Lessened elasticity of the tissues and the traction of scars cause thinning of the wall. Abscess and gangrene are difficult to separate. The early diagnosis, to which a chronic catarrh may point, is now rendered much easier by the use of iodized oil as a contrast medium, for otherwise the roentgenograms are often difficult to interpret. The only disagreeable thing about the method is the anesthesia. As to treatment—in addition to the withholding of fluids—rest and spa treatment and Quincke's position for relief of the affection are recommended. Of proposed interventions, pneumothorax is uncertain; pneumonotomy, with correct technic and proper indications, is sometimes successful. The best results are secured by plastic operations and resection of the diseased portions, followed by drainage; the lung fistula must, however, be kept open for a long time. In preference to the Sauerbruch method with previous ligation of the pulmonary artery, Brauer recommends the opening of all bronchiectases in several sittings, at which he gradually removes the diseased lobe of the lung.

During the discussion that followed, Lorey of Hamburg demonstrated by means of roentgenograms the advantages of iodized oil as a contrast medium. The sound and the contrast medium are introduced under the control of the fluoroscope. The iodized oil had been coughed up for the most part at the end of twenty-four hours. No injuries resulted.

Krehl of Heidelberg opposed unnecessary and dangerous operations, since many patients improve or recover without operation. He demanded exact statistics on the results with and without surgical intervention.

## PRAGUE

*(From Our Regular Correspondent)*

June 1, 1925.

### The Institute of Hygiene

The state institute of hygiene in Prague is being built under a contract between the Czechoslovak government and the International Health Board of the Rockefeller Foundation which was signed in the year 1922. The first part of the institute is nearly complete, and the buildings will be occupied during the summer, so that the official opening of the institute will probably take place next September. Four of the proposed nine divisions will be housed in these buildings. The first division for the production of serums and vaccines will use a farm outside the limits of Prague in Bohumile. This division has been working for two years in its provisional location, so that it will be possible to place products on the market early next year. Up to the present time biologic products have been imported from the surrounding states and were of an unsatisfactory character, as was disclosed through a recent investigation. The division is in the hands of Dr. B. Feierabend, who was trained in the laboratories of Dr. Park of New York. The division for bacteriologic diagnosis will combine four laboratories, which have performed the diagnostic work for the public health service. This division will have subdivisions for parasitology and tuberculosis. The third division will produce and administer rabies vaccine. The Pasteur treatment is now being administered in a general state hospital adjacent to the grounds of the institute of hygiene. Under the new arrangement, the patients will be housed in this hospital; but the treatment will be administered in the institute of hygiene. Prague is the only place in Czechoslovakia where the Pasteur treatment is being administered. With the war there was a considerable increase of rabies in animals, especially in the eastern provinces of the state. About 100 patients are under treatment at a time. Steps are under way to decentralize the administration of the vaccine, so that stations located in the eastern provinces will be supplied with vaccine from the institute of hygiene. The fourth division of the institute will produce smallpox vaccine. Vaccine virus has been supplied by the state laboratory in Jin. Hradec. The activities of this laboratory will be transferred to the institute, and the old laboratory will be kept in reserve. About a hundred persons will be employed in the first four divisions. The rest of the nine divisions will be housed in the main building, the construction of which will be started this fall. In the meantime, negotiations are going on with the Prague medical faculties to define the relationship of the institute of hygiene, a part of the ministry of health, to the medical schools, which are also state institutions but are under the ministry of public instruction. Although originally there was considerable lack of understanding between the two bodies, recently a compromise has been arrived at under which the heads of the divisions of the institute of hygiene will be chosen from the teaching

staffs of the medical schools as far as the personnel is qualified. Another important point of contact between the institute of hygiene and the medical schools is the training of public health workers. The law on the examination of health officers, which is to come before parliament in the near future, places the organization of the courses for health officers in the hands of the institute of hygiene but reserves the lectures in the courses that have their representatives in the teaching staffs of the medical faculties to these professors, while the rest of the lectures will be given by the members of the staff of the institute of hygiene. A four months' course of theory is proposed in the draft of the law, to be supplemented by a two months' practical training in demonstration districts. The erection of the entire institute of hygiene will cost $1,500,000, and the yearly budget will be about $150,000. The contract with the Rockefeller Foundation expires in 1927, when the construction of the institute should be completed.

### Cause of the Death of Smetana

A controversy arose in the medical press on the cause of death of the Bohemian composer Smetana, the centennial anniversary of whose birth was celebrated throughout the nation last year. Smetana died in 1884, and a necropsy was performed by the late Professor Hlava, who gave general paralysis as the cause of death. Prof. A. Heveroch has studied the detailed description of the necropsy findings as given by Professor Hlava, and concludes that the diagnosis of general paralysis recorded in the minutes of the necropsy was not correct from the modern point of view. In a private communication, Professor Hlava before his death admitted that the diagnosis given by him at the time of the necropsy was made according to the stage of scientific knowledge at a time when it was not clear what was the cause of general paralysis and when no distinction was made between the changes in the brain caused by arteriosclerosis and syphilitic endarteritis. Professor Heveroch, in a recent article, substantiates his proof that the death of Smetana was caused by arteriosclerosis and not by general paralysis through a detailed analysis of the clinical symptoms of the disease of the great musician. The necropsy report in the original handwriting of Professor Hlava was reproduced recently in the journal of the Czech physicians. The detailed description of the pathologic changes found in the brain does not lead to the diagnosis of general paralysis. It seems, therefore, to be established that the real cause of the death of Smetana was cerebral atrophy caused by general arteriosclerosis.

### The Antituberculosis League

The annual meeting of the Antituberculosis League was held in Prague, May 16-17. The discussion centered round three problems. The first concerned the lack of team work between physicians and public health nurses of the tuberculosis dispensaries. Most of the physicians who are employed in the dispensaries stress too much the curative side of the problem, while the public health nurses, who are for the most part graduates from the school of social work in Prague, concern themselves more with the social and preventive side of the problem. The difficulty can be solved by enlisting the interest of the dispensary physicians in the social problems of the patients, and by giving the public health nurses a more thorough education in medical problems. The second point of discussion concerned the placing out of children who are born to tuberculous parents, along the lines of the French Oeuvre Grancher. Results similar to those reported by Prof. Leon Bernard of Paris have been achieved in the colony of Postupice, which was originally founded by the province foundlings asylum for sick children. The Prague foundlings' asylum used this colony, which embraces twelve villages, to place out sick foundlings, and supervised the children until they reached maturity. The families in the colony who accept the children belong to the peasant class, and they receive a small fee from the asylum, which scarcely covers the cost of the maintenance of the child.

Since this arrangement has been in operation many years, a public sentiment has been developed in the local families which dictates that a family that is able to receive a foundling is under a moral duty to do so. This colony is being used now for the placing of children born in tuberculous families, and the fees to the families are being paid by the Red Cross or the Antituberculosis League. A resolution was adopted to put this type of activity on a broader basis by educating more families to the same belief that can be found in the colony of Póstupice. The third point that was discussed at the meeting of the league was the provision of facilities for the treatment of surgical tuberculosis. It is a well established fact that tuberculosis of bones and joints has increased since the World War, although pulmonary tuberculosis has returned to the prewar prevalence. The provision of accommodations for this type of patients was advocated in the general hospitals, since it has been clearly brought out by several trials that it is not necessary to send these patients to the sea or to sanatoriums in high mountains, but that heliotherapy and open air treatment in the average level of the country bring beneficial results. In spite of the fact that Czechoslovakia has, in Luže, the second largest institution on the continent for the treatment of bone tuberculosis in children, the facilities for the treatment of adult patients is insufficient. There are approximately 50,000 patients with bone tuberculosis in the state, while there are only about 1,000 beds for this purpose in the general hospitals.

### Examination of Emigrants

The report for the year 1924 of the emigration station in Svatoborice, Moravia, gives some interesting details. The station was erected three years ago by the public health service after a preliminary agreement with the United States immigration authorities. Before the creation of the station, emigrants were exposed to many hardships, since it frequently happened that they were returned from American ports for some defect or sickness after spending all their money for traveling expenses. The ministry of social welfare and the ministry of health made an arrangement with the United States consulate in Prague through which no person is allowed to leave the country as an emigrant unless he has passed the station in Svatoborice. The prospective emigrant applies for the passport at the ministry of social welfare, which enters his name on the waiting list. In due time the emigrant is notified that he should pass through the station in Svatoborice. There he is examined by a physician according to the rules of the United State immigration authorities for the inspection of immigrants, and those who do not pass the requirements are sent home. All the emigrants are vaccinated against smallpox, and in case they come from a district where a highly virulent infectious disease has been notified they are subjected to quarantine. There is also a delousing plant in the station. Recently the activities of the station have included also emigrants to other countries, and emigrants are being inspected according to the admission rules of Argentina, Australia, Brazil, Canada, Cuba, Mexico and Peru. Last year, of 5,524 emigrants who passed through the station, ninety-nine were returned as unfit for emigration. When the emigrant has passed the examination, he is given a certificate to exchange for a passport with the visé of the proper consulate. Thanks to this arrangement, it has become extremely rare for an emigrant to be returned from the port of entry in America.

## Marriages

HAROLD WILLIAMS NAECKEL, Davenport, Iowa, to Miss Mary Alice Coleman of Indianapolis, June 11.

ALEXANDER VANDERBURGH, Brooklyn, to Miss Ruth Dakin Ferguson of New Rochelle, N. Y., May 30.

THOMAS BOLLING GAY, JR., Athens, Ga., to Miss Margaret Elizabeth Shaw of Sumter, S. C., June 24.

BENNETT SOLOMON to Miss Madelin Ruth Davison, both of Springfield, Mass., June 16.

KELLY C. THOMAS, Miami, Fla., to Miss Ruth H. Matthews of Racine, Wis., June 14.

ROBERT WILLIAM LANGLEY to Miss Frances Wagner, both of Los Angeles, May 14.

ARTHUR FORREST ANDERSON to Miss Constance Myers, both of New York, May 30.

LOUIS FAUGERES BISHOP to Miss Kathleen Sinclair, both of New York, June 17.

GEORGE LEWIS STICKNEY to Miss Gladys G. Hogan, both of Baltimore, June 6.

LOUIS GREENSTEIN to Miss Ada Ross, both of Brooklyn, May 30.

## Deaths

**John Edward Moore,** Philadelphia; Jefferson Medical College of Philadelphia, 1890; University of Pennsylvania School of Medicine, Philadelphia, 1892; formerly assistant demonstrator of pharmacy, materia medica and therapeutics, Jefferson Medical College; aged 61; died, June 9.

**William Gillespie** ✠ Cincinnati; Medical College of Ohio, Cincinnati, 1890; professor of obstetrics, University of Cincinnati College of Medicine; member of the Cincinnati Obstetrical Society; aged 57; died, June 7, at the Bethesda Hospital, following an operation.

**Salathiel Ewing** ✠ Salt Lake City; Starling Medical College, Columbus, 1871; past president of the Utah State Medical Association and the Salt Lake County Medical Society; Civil War veteran; aged 91; died, June 4, at a local hospital, of cerebral hemorrhage.

**Francis Charles Clark** ✠ Oswego, N. Y.; Medical College of the State of South Carolina, 1903; formerly on the staff of the Bellevue Hospital, New York; veteran of the Spanish-American and World wars; aged 46; died, May 10, of heart disease.

**George Andrew Bancroft** ✠ Natick, Mass.; Medical School of Harvard University, Boston, 1890; member of the New England Pediatric Society; on the staff of the Leonard Morse Hospital; aged 59; died, May 14, following a long illness.

**James Britton Smith,** East Point, Ga.; Howard University School of Medicine, Washington, D. C., 1906; member of the Kentucky State Medical Association; veteran of the Spanish-American and World wars; aged 57; died, June 5.

**Felix C. Johnston,** Macon, Ga.; Missouri Medical College, St. Louis, 1885; member of the Medical Association of Georgia; aged 65; died, May 25, at the Macon Hospital, of injuries received when struck by a street car.

**Orville B. Lewis,** Fort Meade, Fla.; Atlanta College of Physicians and Surgeons, 1900; member of the Florida Medical Association; past president of the Polk County Medical Society; aged 55; died, May 6, of uremia.

**George S. Stockton** ✠ Grangeville, Idaho; Victoria University Medical Department, Toronto, Ont., Canada, 1887; aged 60; died, June 4, at the Deaconess Hospital, Spokane, Wash., of heart disease and nephritis.

**Henry Gurdon Fish,** St. Petersburg, Fla.; Medical Department of Columbia College, New York, 1877; veteran of the Spanish-American War; formerly coroner of Cass County (N. J.); aged 75; died, June 4.

**Arthur Erastus Ledbetter,** Greensboro, N. C.; University of Maryland School of Medicine, Baltimore, 1888; formerly county health officer and city physician; aged 65; died, June 2, at a local hospital.

**George Bush Norris,** Celeste, Texas; Barnes Medical College, St. Louis, 1901; president of the First National Bank and for many years president of the school board; aged 54; died, June 3.

**Charles M. Beaumont Cornell,** Brockville, Ont., Canada (licensed, Ontario, 1872); on the staffs of the Brockville General and St. Vincent de Paul hospitals; aged 70; died recently.

**Peter S. Replogle,** Champaign, Ill.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1874; Hahnemann Medical College and Hospital, Chicago, 1892; aged 77; died, June 10.

**Gerald Selby** ✠ Lieutenant, U. S. Navy, Annapolis, Md.; Atlanta College of Physicians and Surgeons, 1911; aged 36; was drowned, June 2, in the Severn River, while canoeing.

**George Harrison Sparks,** Brandy, Va.; Medical College of Virginia, Richmond, 1900; member of the Medical Society of Virginia; aged 55; died, May 21, following a long illness.

**Platon M. G. Vallejo,** Vallejo, Calif.; Medical Department of Columbia College, New York, 1864; aged 84; died, June 1, of dilatation of the heart and chronic myocarditis.

**Daniel D. Mulcahy** ✠ Washington, D. C.; Georgetown University School of Medicine, Washington, 1899; aged 53; died, June 1, as a result of a self-inflicted wound.

**Madison M. Milligan,** Santa Fe, N. M.; St. Louis Medical College, 1872; member of the New Mexico Medical Society; aged 77; died, May 28, of cerebral hemorrhage.

**Edward Gustave Zey** ✠ Butler, Mo.; Washington University School of Medicine, St. Louis, 1894; aged 54; died, May 30, at St. Luke's Hospital, Kansas City.

**Edgar J. Greenfield** ✠ Toledo, Ohio; Western Reserve University School of Medicine, Cleveland, 1881; aged 69; died, May 31, of bronchopneumonia.

**Michael Ryan,** Dayton, Ohio; Medical College of Ohio, Cincinnati, 1881; aged 72; died, April 3, at St. Elizabeth's Hospital, following a long illness.

**Thomas Lee Barnett,** Midlothian, Texas; University of Louisville (Ky.) School of Medicine, 1884; aged 68; died, June 2, of septicemia.

**Sarah Emaline Rutherford Calvert,** Denver; Gross Medical College, 1895; aged 72; died recently, of chronic parenchymatous nephritis.

**Frank Lincoln Howard,** Chicago; Jenner Medical College, Chicago, 1896; aged 64; was found dead in bed, June 6, of morphin poisoning.

**William C. Witte,** Chicago; Chicago College of Medicine and Surgery, 1913; aged 37; died, June 14, of cerebral hemorrhage.

**George W. Ryall** ✠ Cleveland; Medical College of Ohio, Cincinnati, 1888; aged 66; died, June 1, at his home in Wooster.

**Arthur Camnitzer,** New York; University of Berlin, Germany, 1895; aged 53; died, May 29, at the Mount Sinai Hospital.

**George Homer McCallister** ✠ Avoca, Wis.; Rush Medical College, Chicago, 1891; aged 55; died, May 28, at Los Angeles.

**David Henry,** Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1892; aged 57; died, May 23.

**James E. Simmons,** Dukedom, Tenn.; University of Tennessee College of Medicine, Memphis, 1889; aged 62; died, May 28.

**William Preston Stephens,** Dallas, Texas; University of Louisville (Ky.) School of Medicine, 1881; aged 65; died, May 29.

**Earle Conner** ✠ New York; Medical Department of the University of the City of New York, 1881; aged 61; died, June 8.

**Michael Peter Link,** Logan, W. Va.; University of Louisville (Ky.) School of Medicine, 1917; aged 43; died, April 18.

**Ira C. Herrington,** Orange, Texas; Memphis (Tenn.) Hospital Medical College, 1900; aged 56; died suddenly, June 3.

**Trall Bennett Childs,** Browning, Ill.; St. Louis College of Physicians and Surgeons, 1889; aged 66; died, May 31.

**Joseph Halms Knox,** Orono, Me.; Hahnemann Medical College of Philadelphia, 1877; aged 80; died, May 22.

**Francis R. Horel** ✠ Arcata, Calif.; Rush Medical College, Chicago, 1885; aged 74; died, April 4, of carcinoma.

**Arthur Kozma,** New York; University of Budapest, Hungary, 1898; aged 54; died, June 4.

# The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

## WITTER WATER

### "Patent Medicine" Methods Applied to the Mineral Water Field

An increasing number of inquiries comes to THE JOURNAL regarding Witter Water, a product put out by Witter Medical Springs of San Francisco. The following inquiry from a Wisconsin physician is typical:

"A patient of mine handed me the enclosed letter for an opinion as to the merits of the claims made. Will appreciate information regarding this wonderful (?) Witter Water Company."

The letter enclosed was on the stationery of the Chicago office of the Witter Water Company. Witter Water is advertised in newspapers and by circular letters as a remedy for "high blood pressure." The public is warned of the tragic consequences of this condition, and given the usual line of testimonials telling how Mrs. A with high blood pressure and one foot in the grave took Witter Water and recovered.

"Witter Water is the one certain way of neutralizing and throwing off the poisons that cause your high blood-pressure," we are told. Further, the dispensers of Witter Water know from "years of study and experience" that medicine cannot cure high blood pressure, while "Witter Water removes the cause and, therefore, gives permanent relief." In fact, we are to believe that nothing other than Witter Water will give permanent results in this condition, and there is no substitute for this product.

In a booklet issued from the home office in San Francisco we find the following statement:

"ALKALINE PROPERTIES OF WITTER WATER: Witter Water is primarily an alkaline water. The principal alkaline combinations, as you will see from studying the chemical report on the preceding page, are Sodium Bicarbonate and Magnesium Bicarbonate. These combinations, if taken into the system in a sufficient quantity, will, in time, neutralize an acid blood and restore it to its normal alkaline constituency."

Then follows a paragraph dealing with the alleged "Antiseptic Properties of Witter Water." The exploiters claim that a study of the chemical analysis of Witter Water which appears in the booklet "shows that the Witter Water contains some very highly antiseptic elements, such as Potassium, Iodin, Chlorin and Metaborate [Metaboric?—ED.] Acid." "Without a doubt," we read, "the Metaborate Acid, because of its large quantity, is the principal antiseptic agent in the water."

And then comes a paragraph on "Vasodilators," discussing the "group of drugs known as the nitrite group" with this statement:

"One of the principal members of this group is the Sodium Nitrite, which is found in Witter Water, and which, undoubtedly, accounts for its direct action in the reduction of blood pressure."

Also Witter Water contains potassium iodid. The amount the exploiters admit is small, but they claim to have reports indicating that there is a sufficient quantity of this drug in the water to produce beneficial action.

The Witter Water booklet contains a laboratory report giving an analysis of Witter Water both in terms of "ions" and also in "hypothetic combinations." The main combinations in Witter Water, according to this report, are sodium bicarbonate, magnesium bicarbonate and sodium metaborate.

An analysis of the water, published a few years ago by the Witter concern, gave materially different figures from those in the present analysis, as the following comparison will show:

| | Old Analysis | Present Analysis |
|---|---|---|
| Sodium bicarbonate (grs. per U. S. gal.) | 578.80 | 245.71 |
| Magnesium bicarbonate (grs. per U. S. gal.) | 332.99 | 189.64 |
| Sodium metaborate (grs. per U. S. gal.) | 0.06 | 176.19 |
| Sodium nitrite (grs. per U. S. gal.) | none | 1.54 |
| Potassium iodid (grs. per U. S. gal.) | none | 0.07 |
| Sodium chlorid (grs. per U. S. gal.) | 55.09 | 48.25 |
| Potassium chlorid (grs. per U. S. gal.) | 9.30 | 11.92 |
| Calcium bicarbonate (grs. per U. S. gal.) | 34.97 | 25.41 |

While the ingredients shown above are not all those that were determined by the chemists in the two analyses of this product, they are the ones that are alleged to be present in any material quantities. It is worthy of note, too, that the old analysis declared that Witter Water contained 590 c.c. per liter of free carbon dioxid. The later analysis gives the amount of free carbon dioxid as 1,590 c.c. per liter.

From this it would appear that the Witter Water of a few years ago—which was at that time recommended as a "positive cure" for Bright's disease and diabetes, and an "infallible cure" for diseases of the liver and bladder, as well as a "permanent" cure for gastric and stomach ulcer, not to mention its power to dissolve calculi and stone in the bladder as well as cure paralysis—had a different composition from the Witter Water of today. It is to be presumed also that the Witter Water of today is bottled more carefully than it used to be, for in 1916 the federal government declared a shipment of the product adulterated because the water contained filthy, decomposed and putrid substances.

It is worth noting in passing that the amount of sodium nitrite present in Witter Water is 1½ grains to the gallon. A case of Witter Water apparently contains about 6½ gallons and costs $30. For $30, therefore, the sufferer from high blood pressure would get approximately 10 grains of sodium nitrite.

Of potassium iodid, it will be noted, the patient gets still less. According to the analysis there is seven one-hundredths of a grain of potassium iodid in each gallon of Witter Water. In a case of Witter Water, therefore—$30 worth—one would get less than one-half grain of potassium iodid. To get a single average therapeutic dose of potassium iodid the patient would have to consume more than two barrels of Witter Water, at a cost of over three hundred dollars. Yet the exploiters seem to think that the sodium nitrite content and the potassium iodid content are something to talk about.

A study of the "literature" of some of the widely advertised mineral waters makes one wonder whether the individuals or concerns exploiting them are graduates from the "patent medicine" school of advertisers.

# Correspondence

## "SUNLIGHT AND HELIOTHERAPY"

*To the Editor:*—In the May 16, 1925, issue of THE JOURNAL, p. 1499, you speak of ultraviolet rays coming from the sky when the sun is obscured by cloud. Here in this part of California we have much high fog, which completely hides the sun. Can one get good effects from exposure in a tuberculous gland case on such a day? We have many of them. I have a patient with whom I wish to use heliotherapy for cervical enlarged glands.

HELEN C. CLEAVES, M.D., Pacific Grove, Calif.

COMMENT.—In the Report of the Medical Research Council for the year 1923-1924, to which reference was made in a footnote to THE JOURNAL'S editorial comment, it is stated that:

"Methods for standardization of ultraviolet radiation have been developed by Mr. Webster, Dr. Eidinow and Dr. Hill. A standard solution of acetone methylene blue is used in a standard quartz tube, and the bleaching of this solution is measured against a set of standard tubes containing solutions of pure copper nitrate, and the method has been standardized biologically by reference to the killing of infusoria in a standard quartz tube and to the production of moderate erythema of the white skin of the upper arm. By this method Mr. Angus measures daily the values of the ultraviolet rays at Hampstead, and these are published in the *Times*. Measurements are aso taken in the open country in Oxfordshire by Dr. Tozer, and in the smoke-polluted center of London by the director of the meteorological office. The readings in London are one-half to one-third of those in the country. Daily readings are also being taken at Harrogate by Dr. S. van Boyd, and by Dr. Adams of the Liverpool

Sanatorium, Cheshire. Readings are also being secured to illustrate seaside, alpine, arctic and tropical conditions. By the use of this method the smoke pollution of the air in cities can be measured in a very simple way. Its value in medical practice will be as a ready means of measuring the dosage of ultraviolet rays given by lamps in artificial light treatment.

"Mr. Angus has designed and made a further adaptation of this apparatus by which he has shown that more of the ultraviolet rays even on sunny days come from the sky as a whole than direct from the sun, as Dr. Dorno has already shown by other methods; this is particularly the case when the sun is low or obscured by cloud. This is a fact of practical importance in heliotherapy."

There are so many factors, such as altitude, temperature, humidity, and the angle at which the maximum amount of the rays strike the body, that a rational heliotherapy cannot be expected until suitable methods of measuring various types of radiation have been applied in those places where it is proposed to utilize the sun's rays for therapeutic ends. Obviously, the problem presented by high fogs is quite different from that of low clouds in an otherwise clear sky. Meanwhile, until adequate information has been secured, through the methods of scientific climatology, it may be well to remember the comment of Humphries, who states in his textbook:

"In such places as Switzerland, there is a constancy in the source of light which is a help to accuracy of dose, which is impossible here where the actinic power varies from day to day, hour to hour, and even minute to minute. Clouds of different composition and density filter out these rays or block them almost entirely, for so great a proportion of the time that it is more scientific to rely on artificial sunlight which can be administered independently of climatic conditions."—ED.

# Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

## FOOD POISONING

*To the Editor:*—Can you suggest the etiologic factor in the following case of poisoning: A woman and three men, out of a total of seven who were at the nearly fatal meal, were severely ill when seen about two and a half hours after eating. The menu had consisted of soup, roast beef, pork and beans (canned) of which only the woman had eaten, and freshly made horseradish. The three men who were unaffected by the meal were the only ones who had not tasted the horseradish, which had been made a couple of hours previous to the time of eating and had been standing in an aluminum vessel. The vinegar that was used had been bought in bulk and was of the colorless variety, and did not have a strong, strictly acetic odor. I wonder whether this might be a strictly chemical poisoning. The quartette were vomiting violently at intervals of five or ten minutes and continued to do so long after anything was brought up. While fully conscious, all the affected persons talked coherently, but were quite incoordinate in their movements, especially walking. The woman, who is not very strong at best, continued to vomit until 5 o'clock the following afternoon.

HUGH M. HART, M.D., Adah, Pa.

ANSWER.—Considering the question asked, it would appear that the most important symptom noted was vomiting. There is, however, no statement as to what time after the alleged causative meal vomiting did occur; but it must have been soon after the meal was consumed.

Food poisoning due to bacteria of the paratyphoid group may manifest itself several hours after the contaminated and toxic food has been eaten. Pain, nausea, vomiting, diarrhea and perhaps fever, but particularly diarrhea, are the usual symptoms of this class of food poisoning. Symptoms of poisoning due to some chemical contamination of the food usually manifest themselves soon after the meal, and vomiting may be the first symptom noted.

Epidemiologically, this occurrence points to horseradish as a possible causative factor, in that three persons who were unaffected by the meal were the only ones who had not tasted the horseradish. The effect, if any, of the acidified horseradish on the aluminum container is extremely doubtful, and this chemical factor may possibly be disregarded.

Did this particular specimen of horseradish cause the symptoms that were noted? It is known that this vegetable contains a volatile oil identical with the volatile oil in mustard, and that mustard is an emetic stimulant. Therefore, from the available information the horseradish cannot be eliminated as an interesting causative possibility in this occurrence.

## PREVENTIVE TREATMENT FOR RABIES

*To the Editor:*—Several persons have been bitten by mad dogs in southern Texas recently. Some go directly to the Pasteur Institute at Austin, while others prefer treatment at home. I have just finished giving a child a twenty-one day treatment. I have been getting my serum directly from the laboratory at Houston, Texas, a fresh dose each day. Others have been giving the fourteen-day treatment, receiving all the vaccine at once and keeping it on ice. Which is the more reliable treatment? The fourteen-day treatment would be less expensive to the patient if it is just as reliable.

D. P. REDWINE, M.D., El Campo, Texas.

ANSWER.—The Harris Pasteur treatment can be given and kept on hand by the physician, and is perfectly reliable. The fourteen-day treatment would be reliable if prepared under the Harris method or some method of that type and properly kept. This would be just as reliable as obtaining the material daily, directly from the laboratory at Houston. New and Nonofficial Remedies, 1925, lists the antirabic vaccine of a number of manufacturers which is sent out in packages of seven, fourteen and twenty-one doses. Recently the Council on Pharmacy and Chemistry has announced the acceptance of antirabic vaccine of this class marketed by the H. K. Mulford Co. (THE JOURNAL, March 21, 1925, p. 893), the Cutter Laboratory (THE JOURNAL, May 16, 1925, p. 1497, and the Lederle Antitoxin Laboratories (THE JOURNAL, May 30, 1925, p. 1624).

## SENSITIZATION TO POLLEN

*To the Editor:*—On a patient suffering from hay-fever, the skin tests revealed a positive reaction to two different pollens, ragweed and giant ragweed. The tests have been performed according to the instructions accompanying the test material manufactured by Lederle. What kind of a sensitization would you advise? Kindly omit name and address.

———, M.D., Connecticut.

ANSWER.—Since the patient reacted to two species of ragweed pollen, namely, giant ragweed (*Ambrosia trifida*) and common ragweed (*Ambrosia artemesiaefolia*), the first conclusion might be that he is sensitive to both pollens. However, it would be best to make retests, if possible, to varying dilutions of the two pollens and to find out whether he is much more sensitive to one than to the other. There are regions in the United States where both species of ragweed are common, the giant ragweed usually pollinating earlier than the common ragweed. There are other regions in the United States, such as Massachusetts and Connecticut, where the common, or small, ragweed is decidedly more plentiful than the giant. Since the sensitization of the patient might be very much more positive to one than to the other variety, it would be wise to make retests with proper dilutions. If the patient reacts almost equally to the two pollens in the same dilution, he should be treated with a mixture of extracts of both pollens. Treatment with one pollen would not protect him against sensitization to the other pollen, since pollen sensitization is highly specific.

## USE OF NEO-ARSPHENAMIN IN PATIENT WITH HEMOPHILIA

*To the Editor:*—Please advise me as to the use of neo-arsphenamin in a hemophiliac patient who is in the third stage of syphilis. Is there a contraindication or not, and, if so, what is it and what should be expected in its use?

P. A. BOYKIN, M.D., Jeanerette, La.

ANSWER.—Although arsphenamin delays the clotting of blood, this effect is merely transitory—not lasting much longer than from several hours to a few days. In view of the importance of this agent in the treatment of syphilis, even a hemophiliac patient should not be denied the benefit of this drug, provided it is not used for several days prior to an operation or confinement. This is a good precaution also to exercise with other patients.

# Medical Education, Registration and Hospital Service

## COMING EXAMINATIONS

ALABAMA: **Montgomery, July 13.** Ch., Dr. Samuel W. Welch, Montgomery.

ARIZONA: **Phoenix, July 7-8.** Sec., Dr. W. O. Sweek, 404 Heard Bldg., Phoenix.

CALIFORNIA: San Francisco, July 6-9. Sec., Dr. Charles B. Pinkham, 906 Forum Bldg., Sacramento.

COLORADO: Denver, July 7. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

CONNECTICUT: Hartford, July 14-15. Sec., Reg. Bd., Dr. Robert L. Rowley, 79 Elm St., Hartford.

CONNECTICUT: New Haven, July 14. Sec., Homeo. Bd., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven.

DISTRICT OF COLUMBIA: Washington, July 14. Sec., Dr. Edgar P. Copeland, Stoneleigh Court, Washington.

HAWAII: **Honolulu, July 13.** Sec., Dr. G. C. Milnor, 401 S. Beretania St., Honolulu.

INDIANA: **Indianapolis, July 14-16.** Sec., Dr. W. T. Gott, 333 State House, Indianapolis.

MAINE: Augusta, July 7-8. Sec., Dr. Adam P. Leighton, Jr., 192 State St., Portland.

MASSACHUSETTS: Boston, July 14-16. Sec., Dr. Charles E. Prior, 144 State House, Boston.

NATIONAL BOARD OF MEDICAL EXAMINERS: Written examinations in Class A medical schools, Part III, June 30-July 9. Sec., Dr. J. S. Rodman, 1600 Walnut St., Philadelphia.

NORTH DAKOTA: Grand Forks, July 7. Sec., Dr. George M. Williamson, 860 Belmont Ave., Grand Forks.

OREGON: Portland, July 7-9. Sec., Dr. Urling C. Coe, Stevens Bldg., Portland.

PENNSYLVANIA: Philadelphia and Pittsburgh, July 7-11. Sec., Dr. J. George Becht, State Capitol, Harrisburg.

PHILIPPINE ISLANDS: Manila, Aug. 11. Sec., Dr. Jose V. Gloria, 686 Rizal Ave., Manila.

RHODE ISLAND: Providence, July 2-3. Dr. Byron U. Richards, State House, Providence.

SOUTH DAKOTA: Deadwood, July 21. Dir., Dr. H. R. Kenaston, Bonesteel.

UTAH: Salt Lake City, July 7. Dir. of Regis., Mr. J. T. Hammond, 412 State Capitol Bldg., Salt Lake City.

WASHINGTON: Olympia, July 6. Sec., Mr. William Melville, Olympia.

WEST VIRGINIA: Martinsburg, July 7. Sec., Dr. W. T. Henshaw, Charleston.

WISCONSIN: Milwaukee, June 30, July 1-2. Sec., Dr. Robert E. Flynn, 315 State Bank Bldg., La Crosse.

### Hawaii April Examination

Dr. G. C. Milnor, secretary, Hawaii Board of Medical Examiners, reports the written examination held at Honolulu, April 13, 1925. The examination covered 10 subjects and included 50 questions. An average of 75 per cent. was required to pass. Of the 6 candidates examined, 3 passed and 3 failed. The following colleges were represented:

| PASSED | Year Grad. | Per Cent. |
|---|---|---|
| Rush Medical College | (1924)* | 80.4 |
| Columbia University | (1923) | 86.4 |
| Ohio State University | (1924) | 80.6 |

| FAILED | Year Grad. | Per Cent. |
|---|---|---|
| Nagasaki Special Medical School, Japan | (1906)† | 68.9 |
| Tokyo Imperial University, Japan | (1921)† | 72.3 |
| Tokyo Woman's Special Medical School, Japan | (1919)† | 69.5 |

* This candidate has completed his medical course and will receive his M.D. degree on completion of a year's internship in a hospital.

† Graduation not verified by the American Medical Association.

### Montana April Examination

Dr. S. A. Cooney, secretary, Montana Board of Medical Examiners, reports the written examination held at Helena, April 7-9, 1925. The examination covered 10 subjects and included 50 questions. An average of 75 per cent. was required to pass. Of the 6 candidates examined, 5 passed and one failed. Four candidates were licensed by reciprocity. The following colleges were represented:

| PASSED | Year Grad. | Per Cent. |
|---|---|---|
| College of Physicians and Surgeons, Chicago | (1906) | 83.8 |
| University of Kansas | (1922) 84.8, (1924) | 82.9 |
| Washington University School of Medicine | (1923) | 82.6 |
| Jefferson Medical College of Philadelphia | (1924) | 87.2 |

| FAILED | Year Grad. | Per Cent. |
|---|---|---|
| Emsworth Medical College | (1909) | 42.2 |

| LICENSED BY RECIPROCITY | Year Grad. | Reciprocity with |
|---|---|---|
| Rush Medical College | (1914) | Idaho |
| State University of Iowa College of Medicine | (1923) | Iowa |
| University of Minnesota Medical School | (1924) | Minnesota |
| Washington University School of Medicine | (1894) | N. Dakota |

# Book Notices

A CONTRIBUTION TO THE STUDY OF PERNICIOUS ANAEMIA AND APLASTIC ANAEMIA. By Arthur Sheard, M.D. A Thesis Presented for the Degree of Doctor of Medicine in the University of Leeds. Cloth. Price, $2.50. Pp. 94. New York: William Wood & Company, 1924.

The basis of this book is a detailed study of fifteen cases of pernicious anemia, and one of aplastic anemia. In addition, ninety-three additional cases from the records of the Leeds Infirmary were analyzed. The histories of the latter were, however, too fragmentary to be of any real value. The author reviews the classical work of Combe, Addison and Biermer, giving in detail the views of these early investigators. The more recent work of Hunter, with his arguments, are given at length, and his main contentions are adopted. The various symptoms of the disease are taken up seriatim, the discussion of the gastro-intestinal symptoms being especially worthy of note. The lack of correspondence between the symptoms and the postmortem findings is considered at length, and the discussion is both instructive and clear. Dr. Sheard emphasizes the normal fragility of the erythrocytes in pernicious anemia, which he thinks is of importance in separating it from certain cases of hemolytic jaundice, which may simulate it. The early appearance of achylia gastrica and the cord degenerations, with their importance for early diagnosis, is fully recognized. In general, while little or nothing new is added to our stock of knowledge of pernicious anemia, the book represents a sane, clear study of this interesting condition. The discussion of aplastic anemia is much less satisfactory.

DIAGNOSTIC ET TRAITEMENT DES MALADIES DE LA VÉSICULE BILIAIRE PAR L'EXCRÉTION VÉSICULAIRE PROVOQUÉE (Epreuves de Meltzer-Lyon et de Stepp). Par M. Chiray, Professeur agrégé à la Faculté de médecine de Paris, et M. Milochevitch, Docteur en médecine de l'Université de Paris. Paper. Price, 12 francs. Pp. 156, with 13 illustrations. Paris: Masson et Cie, 1924.

This monograph is part of the series "Médecine et chirurgie pratiques," published to supply concise information for general practitioners and students. The details of non-surgical drainage of the gallbladder are given fully. The authors discuss the value and significance of the three types of bile, recovered by means of the test, and consider at length the relative merits of experimental studies to determine whether or not the method does in reality yield bile from the gallbladder. They are thoroughly convinced of the accuracy of the method, answer all the objections that have been raised, offer a large personal experience to substantiate their claims, and conclude that the Meltzer-Lyon test and that of Stepp do in fact yield bile from the gallbladder; that all the experimental researches tending to prove the contrary are in error and do not negate clinical experience; that introducing magnesium sulphate or peptone solution into the duodenum results in the emptying of the gallbladder primarily by relaxation of the sphincter of Oddi, occurring simultaneously with a tonic contraction of the gallbladder wall, slow and progressive, brought about by a series of small contractions occurring at the rate of about three to five times a minute. While normally the contraction of the gallbladder and relaxation of the sphincter occur simultaneously, according to the law of contrary innervation, as suggested by Doyon and set forth by Meltzer and Auer, in the artificial excitation provoked by the use of drugs one almost never observes this parallel double action; the one mechanism or the other predominates. Although the test may do all the authors claim, it nevertheless is of extremely limited clinical value. If one properly realizes that cholecystitis is a disease of the entire gallbladder wall, and chiefly in the deeper layers of the gallbladder wall rather than in the mucosa, it is obvious that by merely washing out the contents and possibly affecting the epithelium one cannot hope to eradicate a disease primarily in the deeper layers. Furthermore, the statistics of all the larger clinics prove conclusively that in patients operated on for gallbladder disease, from 70 to 80 per cent. show stones at operation. Even the greatest enthusiast does not claim that this method will remove stones from the gall-

bladder; consequently, it cannot hope to cure more than 30 per cent. of all patients. There is no method by which one can absolutely determine or rule out the presence of gallstones. In those cases in which stones are present, this method carries with it a definite menace, because this increased contraction of the gallbladder is likely to favor the passage of the stones from the gallbladder into the common duct, with the greatly added danger of this complication. The old idea of harmless gallstones in the gallbladder has long been discarded. Clinical and postmortem findings demonstrate that at least 10 per cent. of all patients dying from gallbladder disease die as a result of carcinoma of the gallbladder, and that all cases of carcinoma of the gallbladder are associated with gallstones. While there may be some question whether the stones form in these cases as a result of the presence of the carcinoma, or whether the malignant disease results from the irritation caused by the presence of the stones, the latter theory is the one most generally accepted, as it fits in with our ideas of carcinoma elsewhere, a disease caused by chronic irritation. Any method that aims to avoid the operative cure of gallbladder disease carries with it, therefore, some menace to the patient.

TEETH AND JAWS ROENTGENOLOGICALLY CONSIDERED. By Herman A. Osgood, M.D., Roentgenologist to the Trumbull Hospital. Volume Five of the Annals of Roentgenology, a Series of Mongraphic Atlases. Edited by James T. Case, M.D. Cloth. Price, $10. Pp. 99, with 407 illustrations. New York: Paul B. Hoeber, Inc., 1925.

This book, dealing with a special branch of roentgenology, is an elaboration of the author's postgraduate lectures on roentgen-ray diagnosis of dental lesions. As the author is a physician-roentgenologist, the point of view differs somewhat from similar works written by dentist-roentgenologists. The importance of the angle of central ray in the production of proper tooth shadows is well shown in text and illustration. An innovation consists in the manner of the half-tone illustrations, these being enlargements of the original dental roentgen-ray film to two and one-half times the normal size. This results in a distinct loss of finer shadow details of the dental and surrounding bone structures, while the enlargement of the various shadows gives a rather bizarre appearance to the illustrations. Other illustrations are reductions of the original which would seem to reflect a disproportion of shadow values, not entirely to the advantage of the reader, particularly if he is more or less unaccustomed to roentgen-ray dental film work. The volume is one of a series of books on special roentgen-ray subjects edited by Dr. James T. Case, all of which reflect a praiseworthy effort to provide the American roentgenologist with works of value in the various branches of roentgenology.

HANDBOOK OF OPERATIVE SURGERY. By Sir William Ireland de C. Wheeler, B.A., M.D., F.R.C.S.I., Surgeon to Mercer's Hospital and the National Children's Hospital. Fourth edition. Cloth. Price, $5.50. Pp. 441, with 298 illustrations. New York: William Wood and Co., 1925.

The author has included a certain amount of operative surgery for practitioners with that for students, but has limited the contents to a small volume. The chapters on ligations of arteries and amputations take up one third of the book. There is a brief discussion of anesthesia, plastic surgery, bone and joint operative procedures, nerve suture, operations on the thorax and on the genito-urinary tract, and the common operations on the abdominal viscera. The contents have been well chosen, and the numerous illustrations are satisfactory. The occasional insertion of original methods of the author, which are recommended by his surgical experience, lend additional interest to the volume.

LA OBESIDAD Y SU TRATAMIENTO. Por Marcel Labbé. (Prólogo del Dr. G. Marañón.) Paper. Price, 6 pesetas. Pp. 151, with 7 illustrations. Madrid: Editorial Paracelso, 1924.

The interesting feature of this work on treatment of fatness is its common sense and independent point of view. Mastery of the subject is of course implied in any contribution from such a noted student of metabolism as the author. While discussing prevailing ideas, Labbé examines them critically and shows what result may be reasonably expected and how they fared in his own practice. Altogether, this is a brief and thorough review of one of the evils of modern civilization and its correction.

# Miscellany

## JAN EVANGELISTA PURKYNĚ (PURKINJE) ON DISTURBANCES OF THE VISION BY DIGITALIS, ONE HUNDRED YEARS AGO

P. J. HANZLIK, M.D.
SAN FRANCISCO

Some time ago I received from Prof. Dr. Kamil Lhoták v. Lhota, professor of pharmacology in the Czech University of Prague, an interesting and handsome volume[1] of the original works of Purkinje, parts of which apparently have not been published previously, or have been forgotten and are unknown. Among other sections and passages describing the actions of certain drugs is a section giving an interesting and unusually clear description of visual disturbances caused by digitalis, an item which, at this time, may be of more than passing interest. Since this work may not be generally available in libraries and to physicians, I submit the following free translation of Section XV in the second book dedicated to Goethe.

XV

FLICKERING BEFORE THE EYES AFTER ADMINISTRATION OF DIGITALIS

My personal experience with various specific and subjective disturbances of the vision, however small, have led me to suspect that behind the common, indefinite expressions of glaring, flickering, sparkling, etc., something more definite and somewhat more specific could be demonstrated by closer observation. Likewise the statements of patients about flickering before their eyes after taking *Digitalis purpurea* were never satisfactory to me, and I could not resist the temptation to look for a more exact explanation of the phenomenon. Therefore, I took an aqueous extract of digitalis (3 grains daily) during four days and experienced practically no general effects from this small dose. However, on the second day, I noticed a very soft flicker before my left eye but could discover no regular conformation in the distribution of the lights and shadows. It appeared as if the lens trembled with each look, whereby the altered refraction caused a rapid and fleeting distribution of light and shaded spots on objects. The luster also led me to believe that such a mechanical change in the images might determine the phenomenon. On the third day the flickering was somewhat more pronounced, and it was not only present during winking but also each time I looked from a light (the window space) to a dark place in the field of vision. This led me to suspect that it was not the mechanical motion but rather the sudden transition from light to dark that was one of the most important conditions of that phenomenon. I then turned the eye toward the bright sky and, without closing and moving it, covered it quickly with my hand and the flickering appeared as markedly as before.

During the following days the phenomenon appeared even more marked in the right eye. Repeated observation sharpened its appearance, and I could make out a definite conformation; Figure 38 gives a sketch of this. In the center of the field of vision there was a rounded spot of dim light, which disappeared and again reappeared intermittently, and around were noticeable several such concentric light and dark waves in similar motion. This flickering lasted several days (altogether seven) after the administration of the digitalis, displaying itself only toward the end by reappear-

1. Beobachtungen und Versuche zur Physiologie der Sinne, Zweites Bändchen, Neue Beiträge zur Kenntniss des Sehens in Subjectiver Hinsicht. Berlin, 1825, G. Reimer. Opera Omnia. Tomus I (in Latin and German). Joannes Ev. Purkinje, Edited by Prof. Dr. Kamil Lhoták v. Lhota for the Czech Medical Society (Spolek Českých Lekaru), Prague, 1919.

ing briefly when I stepped into the house after moderate exertion at walking and stair climbing. In other respects the flickering at this time was just like that which developed in its special form after taking digitalis and was not unknown to me formerly. Frequently the same thing occurred after severe exertion of the respiratory organs, for instance, after running a race with some one, and I do not doubt that also others have observed the same thing under similar circumstances. This indicates that the flickering is sympathetic, and may have its idiopathic seat in the pulmonary and cardiac branches of the vagus nerve. In order to convince myself of this, and perhaps to obtain a still clearer demonstration of the flickering, I made a more pretentious experiment some weeks later.

At about 8 o'clock in the morning and one hour after a full breakfast, I took a concentrated decoction of the leaves of *Digitalis purpurea* (2 drams to half a quart, boiled for half an hour). Toward 10 o'clock I became nauseated, and the pulse, whose ordinary rate was between 60 and 70, had slowed down to 54, missing many times, and I felt a sensation of oppression with each beat, as if the heart had been seized by the hand; otherwise I felt invigorated.

At noon I ate the ordinary amount without appetite, and expected to correct the nausea with this. During the afternoon the condition remained the same. At about half past eight in the evening I had an attack of the so-called "heart worm" (cardiac distress) with intermittent pulse, congestion in the head, especially in the back and toward the left, and a desire to vomit. I stimulated vomiting several times by mechanical irritation of the back of the tongue and the pharynx, this resulting in the expulsion of a large quantity of saliva with mucus and acid food, but not a trace of the decoction of digitalis. During the night I awoke three times from a peaceful, dreamless sleep, being aroused by violent sneezing, which arose from the esophagus as a mild sensation of nausea, and relieved itself in the nervousness during sneezing. Toward 5 o'clock in the morning of the following day there was spontaneous vomiting which removed no food residue and only a quantity of the unchanged decoction. Now for the first time flickering developed in the left eye: nausea, cardiac oppression, a sensation of weakness and muscular tremor lasting the entire day. I was not disposed to leave the bed, my appetite was poor, and I took only some clear soup off and on, in order to suppress the unnatural vomiting which the digitalis still produced.

Toward noon the characteristic flickering appeared for the first time and markedly in the right eye, so that I could sketch its contour exactly (Figs. 39 to 41).

Besides this I could elicit a dull phosphorescence (Fig. 42) on closing and gently rubbing the eye, a phenomenon which I had described in previous contributions. Moreover, the eye was unusually sensitive toward light, yet I did not find the pupil beyond its usual size. I vomited several times during the day with the aid of mechanical irritation when nausea and the desire to vomit became acute.

On the third day, the symptoms were still the same. On the fourth day, I got up, felt marked lassitude, and had pains in the calves of my legs. I had some diarrhea and passed some irritating and deep red urine containing mucus. On the fourth day I noticed a burning sensation in the right eye, followed by a small pustule on the edge of the conjunctiva toward the inner canthus, surrounded by a narrow zone of inflammation, and where previously I had never had a spontaneous inflammation. On the seventh day, the cardiac oppression, slow pulse, pain in the legs and anorexia disappeared completely. The flickering lasted till the fifteenth day. During this entire time the brain was not affected in the least (as, for instance, after opium, camphor or datura).

A habitual cough, which I had for several weeks, disappeared entirely during this time, and later did not return.

I regret that I neglected to observe the respiratory rhythm, which is said to be slower after the administration of digitails.

I come now to a more detailed consideration of the beautiful forms of light that were observed. Figure 39 represents them as they appeared on the second day, and Figure 40 shows an exaggerated form of the same thing on the third day. Toward the last, when the flickering had subsided and practically disappeared, a fragment still showed up off and on and as indicated in Figure 41, but it was inconstant as to location and behavior. Without further description and allusion to the figures, I shall call these forms flicker roses. The light itself is a subjective one, analogous to the sensation of blinding which remains after the effect of a strong external light in the eye.

However, this light lasts only a moment, when the change from light to dark occurs, and disappears again presently. It is only intensified by external light, but not by rubbing or pressure. It is transparent; therefore it throws a weak, blinding shimmer on objects especially in shaded parts, and, hence, diminishes their visability without obscuring them, and not like the blinding picture of the sun. This similarity to blinding pictures suggests a suitable method for making definite observations without the necessity of resorting to unpleasant experiments. One may sketch on white paper forms similar to the types in the accompanying figures, the white portions being drawn deep black and the gray left white. Now one looks at the figure in bright sunlight, holding it as close to the eye as possible in order that the greatest part of the visual field is included, and until he feels that the blinding picture has thoroughly impressed itself and then looks at the surroundings immediately before him and intermittently closes and opens the eye, obtaining in this way an idea of the structure and the conformation to the light image.

However, the internal motion, the disappearance and the appearance of the same, is illustrated best by an agitated water surface in a wide vessel which has been disturbed by touching it in one or more places. Figure 42 gives an approximate representation of the phenomenon just described and which revealed itself to me on closing and rubbing my eyes, except that one must imagine the individual spots of light appearing and disappearing alternately in wavelike motion. One can best illustrate the same thing to himself by making similar streaks with an oily solution of phosphorus on a surface in the darkness, and then as they begin to disappear if air is blown on them they show a similar brilliance, a waning and kindling of the light, with disappearance and reappearance of it as is observed subjectively. The two types of light images are not constant throughout in their contours, which indicates an inner relation to the structure of the retina, as can be the case with octagonal radial rays and with rectangular spiral forms (described by the author in Book I).

Figures illustrating visual disturbances from digitalis described by Purkinje.

The foregoing suggestion, that flickering after the use of digitalis is more sympathetic than idiopathic, depends on affections of (changes in) the vagus nerve, as confirmed by the latter experiment in which all the other symptoms, nausea, cardiac excitement, sneezing, and the action on the heart and lungs, indicate a marked stimulation of this nerve.

I do not doubt that a similar flickering can appear in other affections, for instance, after the administration of other nauseants.

The accompanying illustrations reduced to one third, are those referred to by Purkinje in his description, and faithfully represent the copies in the work edited by Professor Lhoták. Figure 42 has been retouched slightly to bring out the lighter portions of the spiral in the original, since these portions were dimmed after photography.

Stanford University School of Medicine.

# Medicolegal

### Licensing of Physician Discretionary

*(Wooding v. MacAlister et al. (N. J.), 127 Atl. R. 38)*

The Supreme Court of New Jersey says that a rule to show cause was allowed in this case, directed to the members of the state board of medical examiners of the state of New Jersey to show cause why a peremptory or alternative writ of mandamus should not be issued commanding and enjoining them to issue to the prosecutor a license to practice medicine and surgery in New Jersey. The record showed that the prosecutor was licensed to practice medicine and surgery in the state of Colorado in 1890. His Colorado license stated that it was granted by registration of his medical diploma from the Rush Medical College. It was not by examination and, for this reason, the New Jersey state board of medical examiners refused him a license to practice in New Jersey, March 26, 1924. As a justification of such refusal, the board invoked the statute of New Jersey which has a provision applicable where the applicant has been examined and licensed by the examining and licensing board of another state, and which further provides that the New Jersey board may, in its discretion, grant a license to practice medicine and surgery. It is quite clear that there is a discretion rested in the board to grant or withhold a license under the statute. Therefore the application for a writ of mandamus is denied.

### Injury Inciting Latent Disease into Activity

*(Dickson Construction & Repair Co. et al. v. Beasley (Md.), 126 Atl. R. 907)*

The Court of Appeals of Maryland, in affirming a judgment affirming an award of compensation, under the workmen's compensation act, in favor of claimant Beasley, says that in June, 1922, he was struck on his arm and his forehead by a flying piece of concrete. At the time there seemed to be only a superficial injury and apparently it would have caused little or no disability if the man had not been infected with syphilis. In a short while an abscess with other disease conditions in the head about the point of contact appeared, and he became disabled from working. Payments of compensation were made up to May, 1923, and were ordered stopped from that time. The question was presented: Was the disability subsequent to May 13, 1923, the result of an injury received in June, 1922? The disease or infection had, obviously, an independent origin, and the question in dispute was whether it may have been started up or aggravated so as to disable the man.

It is familiar law that, except in suits for breach of contract, in which the court and parties are concerned only with results contemplated by the parties or, so to speak, contracted for by them, all conditions which naturally and proximately result from a cause, whether contemplated or not, are, for the purposes of the law, treated as coming within the effects of that cause. In applying this principle it has been established that, when disease or infection is so set in motion or aggravated by an injury that disabilities result which would not otherwise have occurred, such disabilities are to be treated as the results of the injury.

It was argued that the evidence in this case was that the extended disability of this man was beyond the duration of any natural results of the injury itself, and was prolonged only by the infection, and therefore it was the natural result of the infection, rather than of the injury. This, it seems to this court, could never be a valid argument in a case in which there was evidence sufficient for a finding of fact that the disease or infection was previously inactive, and was made disabling only by the intervention of the injury. For, once it has been determined that this was the fact, then any prolongation of the disability by the infection so started up is still regarded as a prolongation of the effects of the injury. From the principle that the activity of the infection is to be treated as the result of the injury, it must follow that the prolongation of disability by that activity is within the results of the injury. There is, furthermore, an abundance of authority for treating all that follows any aggravation or acceleration of a disease or infection by an injury as the result of the injury. But some discrimination may be necessary in cases of trivial injuries, and that may be left to the cases as they arise.

Again, it was contended that the claimant's refusal of treatment alone was the responsible cause of the continued disability. But he testified that the physician told him that he would be cured by the five or six treatments which he did take, and it was not clear from his testimony that he understood his instructions, or it might be that he did not remember them. In this situation the court concludes that, however clear the testimony produced by the defendants on the instructions given, and the probability of freedom from further disease under treatment, the trial court could not have said that, beyond any dispute, the claimant had unreasonably refused to submit himself to treatment.

### Privilege After Use of Certificate in Proofs of Death

*(Pepala v. John Hancock Mut. Life Ins. Co. (Mich.), 201 N. W. R. 465)*

The Supreme Court of Michigan, in affirming a judgment in favor of the plaintiff beneficiary, on a policy of life insurance, says that the policy was issued, May 27, 1921. The insured died in the following November. The defendant contended that the trial court should have directed a verdict for it at the close of the case, because the plaintiff's proofs showed on their face that the insured was guilty of making fraudulent statements concerning his health in his application. This was based on the answer of a physician that on April 28, 1921, he examined the chest of the insured, and "made diagnosis of pulmonary T. B., and confirmed it on May 6, 1921, by positive sputum." If this statement of the physician were otherwise competent to bind the plaintiff as an admission, it would be rendered incompetent by the Michigan statute. The physician's certificate showed that he gained his knowledge or information by treating the insured professionally. This would render it privileged under the statute. The plaintiff, by submitting it as a part of the proofs of death, could not, by so doing, waive the privilege of the statute.

### Slight Attack of Influenza Ignored

*(Arkansas State Life Ins. Co. v. Allen (Ark.) 266 S. W. R. 449)*

The Supreme Court of Arkansas, in affirming a judgment for plaintiff Allen for insurance where the insured died in March, 1923—three months after the issuance of the policy—apparently with the grip, says that a physician testified that he was called to see the insured in 1921; that she had a slight case of influenza, or grip, with some fever; that it was a temporary attack, and that her general health was not affected. He also stated in the proof of death he thought the sickness for which he treated the insured the year before had no connection with the cause of her death. If the statement had been made by the insured that she had not been treated or advised by a physician in the past two years, it would not have rendered the policy void for the reason that the testimony of the physician showed that his treatment of her within two years prior to the issuance of the policy was for a trivial ailment of temporary duration which did not effect her general health. Such ailments were not in the contemplation of the parties, and did not affect the risk assumed by the insurance company, and were not a breach of the insured's warranty that each of the statements in the application for insurance was true.

# Society Proceedings

## COMING MEETINGS

Montana, Medical Association of, Lewistown, July 8-9. Dr. E. G. Balsam, 222 Hart-Albin Building, Billings, Secretary.

North Pacific Pediatric Association, Portland, June 29. Dr. E. J. Barnet, Paulsen Building, Spokane, Wash., Secretary.

Pacific Northwest Medical Association, Portland, Ore., June 29-July 1. Dr. Frederick Epplen, Paulsen Building, Spokane, Wash., Secretary.

# Current Medical Literature

## AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL for a period of three days. No foreign journals are available prior to 1920, nor domestic prior to 1923. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested).
Titles marked with an asterisk (*) are abstracted below.

### American Journal of Psychiatry, Baltimore

**4**: 589-800 (April) 1925

Schizoid and Syntonic Factors in Neuroses and Psychoses. A. A. Brill, Atlantic City, N. J.—p. 589.
Negative Histologic Findings in Experimental Organic Processes. S. T. Orton, Iowa City.—p. 599.
Mental Examinations of College Men. M. W. Peck, Boston.—p. 605.
Dementia Praecox as Type of Hereditary Degeneration. L. B. Alford, St. Louis.—p. 623.
*Epidemic Encephalitis. E. A. Strecker and G. F. Willey, Philadelphia.—p. 631.
Interpretations of Manic-Depressive Phases. E. D. Bond and G. E. Partridge.—p. 643.
Primitive Mentality and Racial Unconscious. W. A. White, Washington, D. C.—p. 663.
Aseptic Meningitis in Treatment of Dementia Praecox. R. S. Carroll, E. S. Barr, R. G. Barry and D. Matzke.—p. 673.
Psychic Manifestations in Cases of Brain Tumors. F. P. Moersch, Rochester, Minn.—p. 705.
Homicide in Massachusetts. A. W. Stearns, Boston.—p. 725.
General Paralysis of Insane During Senescence. I. A. Darling, Warren, Pa.—p. 751.
Prolonged Confusional States Simulating Dementia Praecox: Differential Diagnosis. A. Gordon, Philadelphia.—p. 757.
Place of Psychiatry in Medical School Curriculum. E. S. Elwood.—p. 767.

**Epidemic Encephalitis.**—Strecker and Willey report four cases of epidemic encephalitis complicated by pregnancy and make a preliminary report of experimental therapy by intravenous injections of acriflavine.

### Archives of Dermatology and Syphilology, Chicago

**11**: 579-720 (May) 1925

*Tryparsamide in Treatment of Neurosyphilis. J. H. Stokes, Philadelphia, and L. F. X. Wilhelm, New York.—p. 579.
*Urticaria Pigmentosa with Hyperplasia of Thymus. L. Hollander, Pittsburgh.—p. 611.
*Glucose Tolerance Reactions in Eczema. S. Ayres, Jr., Los Angeles.—p. 623.
Studies on Hair; Hypertrichosis. C. H. Danforth, Stanford University, Calif.—p. 637.
*Rat Bite Dermatitis: Case. W. B. Adams, Beirut, Syria.—p. 654.
Effect of Glucose on Stabilization of Solutions of Arsphenamin and Neo-Arsphenamin. J. F. Schamberg and A. M. Rule, Philadelphia.

**Tryparsamide in Neurosyphilis.**—Stokes and Wilhelm are still disposed to regard tryparsamide, because of the possibility of eye complications, as a last rather than a first therapeutic resort in asymptomatic neurosyphilis. In obvious early paresis, they recommend its use after or in conjunction with other forms of treatment. The experience of other observers has established its unfitness for use in most other aspects of syphilis, owing to its lack of spirillicidal power. While results of by no means negligible value can be secured in the treatment of neurosyphilis by standard methods, tryparsamide is, in the authors' experience, superior both clinically and serologically for the treatment of the resistant case of neurosyphilis.

**Enlarged Thymus with Urticaria Pigmentosa.**—Hollander reports two cases of urticaria pigmentosa showing hyperplasia of the thymus gland. Some similarity between status thymicolymphaticus and urticaria pigmentosa is pointed out. Treatment of the enlarged thymus with radium, followed by involution of urticaria pigmentosa, is described.

**Glucose Tolerance Reactions in Eczema.**—A report is presented by Ayres dealing with the glucose tolerance reactions in a series of eighty-six consecutive cases of typical eczema. In this series there was no constant association of decreased sugar tolerance with any one definite clinical type of eczema. The percentage of cases in the eczema group showing unusually high values was much greater than in the normal group. Thus, in the eczema group, 12.7 per cent. of the eighty-six cases showed readings of 200 mg. or more of sugar per one hundred cubic centimeters of blood two hours after the test meal, as compared with 0.8 per cent. of 253 clinically normal persons. In other words, there were more than fifteen times as many decidedly abnormal reactions in the eczema series as in the normal series at the two hour interval. In not a single instance in which an abnormal reaction was present had the patient been aware of the existence of any disturbance of his carbohydrate metabolism.

**Rat Bite Fever.**—The case cited by Adams yielded promptly to neo-arsphenamin.

### Archives of Neurology and Psychiatry, Chicago

**13**: 449-680 (May) 1925

*Fourteen Simultaneous Cases of an Acute Degenerative Striatal Disease. A. H. Woods, Peking, China, and L. Pendleton, Techow, China.—p. 449.
*Case of Decerebrate Rigidity in Man. L. E. Davis, Chicago.—p. 509.
Cerebral Pneumography: Dangers and Uses. W. G. Penfield, New York.—p. 580.
Behavior of Plantar Reflex in Jacksonian Epilepsy. Pathologic Physiology of Babinski Sign. A. Tournay, Paris.—p. 592.
Extrapyramidal System. A. Jakob, Hamburg, Germany.—p. 596.

**Acute Degenerative Striatal Disease.**—Fourteen simultaneous cases in three families of an acute degenerative striatal disease are reported by Woods and Pendleton. The onset was abrupt, without fever, in thirteen cases. The first symptoms were repeated failures of the muscles of equilibrium and then speech defects without aphasia. Three of the patients had lethargy lasting from a few days to more than a week. Seven complained of vertigo and faulty hearing. All showed disorders of the highly synthetized movements, some merely irregular waves of muscular tone, some torsion spasm, and some had athetoid and balancing movements superimposed on attempted voluntary movement. There was concomitant internal capsular involvement in two patients. The course was abortive in five, of brief duration in four, with practically complete recovery in all of these; it was progressive without death in three, with death after two years in one. One case was fulminating, with death in two weeks. The age range was from 4 to 56 years. The patients who died were the youngest; no patient over 20 years of age was seriously ill. Both the severity of the symptoms and the fatality were in inverse proportion to age. Three of the cases occurred in females, of whom one died; eleven occurred in males, of whom one died. In the one case that came to necropsy were found death of ganglion cells, glial reaction and gross necrosis, the process being most severe in the substantia nigra and globus pallidus. There were no evidences of encephalitis.

**Decerebrate Rigidity in Man.**—The condition in the case cited by Davis was diagnosed as a suprasellar cyst and was shown by operation and necropsy to be so. The cyst produced sufficient compression upward on the brain stem to produce clinical symptoms exactly simulating the picture of experimental decerebrate rigidity.

### Florida Medical Association Journal, St. Augustine and Jacksonville

**11**: 197-211 (Feb.) 1925

Clinical Recognition of Cardiac Irregularities. H. H. Harris, Jacksonville.—p. 197.
Abdominal Pain in Lower Right Quadrant. R. A. Gowdy, Miami.—p. 201.
Pain in Right Upper Quadrant. R. O. Lyell, Miami.—p. 203.
Practical Application of Minimum Standard of American College of Surgeons. I. M. Hay, St. Augustine.—p. 204.
Pains in Left Abdomen. W. C. Jones, Jr., Miami.—p. 206.
Nonoperative Treatment of Hemorrhoids.—p. 209.

### Journal of Cancer Research, Lancaster, Pa.

**9**: 1-170 (March) 1925

*Theory of Origin of Tumors. G. L. Rohdenburg, New York.—p. 3.
*Comparative Cytologic Study of Neoplasms of Animals and Plants. M. Levine, New York.—p. 11.
*Cell Division in Cultures of Fibroblasts. A. Fischer, Copenhagen, Denmark.—p. 50.
*Cultivation of Malignant Tumor Cells Indefinitely Outside Body. A. Fischer, Copenhagen, Denmark.—p. 62.
Division of Sarcoma Cells in Vitro. A. Fischer, Copenhagen, Denmark.—p. 71.

*Rapid Production of Cancer in Rabbits by Coal Tar. K. Itchikawa and S. M. Baum, New York.—p. 85.
Enzyme Action. XXXI. Comparative Lipase Actions of Human Tumors. H. M. Noyes, K. Sugiura and K. G. Falk, New York.—p. 105.
Id. XXXII. Comparative Lipase Actions of Twort and Bashford 63 Mouse Carcinomas. K. Sugiura, H. M. Noyes and K. G. Falk, New York.—p. 129.
*Experimental Production of Malignant Growths by Simple Chemicals. J. K. Narat, Chicago.—p. 135.
*Metabolism of Carcinoma Cells. O. Warburg, Berlin-Dahlem.—p. 148.

**Origin of Tumors.**—It is Rohdenburg's belief that neoplasia is a condition brought about by a disturbance of the salt metabolism of the cell, by reason of which the cell becomes hypermineralized as compared with the surrounding body juices.

**Cancer Cells with Lobulate Nuclei.**—Levine contends that the cells with lobulate nuclei seen in cancer have not been adequately studied and their significance has not been understood. These cells are found in actively growing parts of carcinomas, and their nuclear structure appears to be associated with some increased metabolic process involved in the growth of the malignant neoplasm. The giant cell with the multilobulate nucleus appears to play an important rôle in the growth and development of the malignant neoplasm.

**Cell Division in Culture.**—Experiments made by Fischer have brought out one main fact, namely, that the cell divisions in a given piece of growing tissue in vitro (a several months old strain of fibroblasts) seem to proceed periodically. It was observed in a regularly growing piece of tissue that a high precentage of cells are dividing within a comparatively short time and that before, as well as after, there is a relatively long period of latency.

**Cultivation of Tumor Cells.**—A method has been developed by Fischer by which it is possible to cultivate sarcoma cells of the type of Rous chicken sarcoma for a long time outside the body. By placing a piece of muscle tissue from an adult normal chicken side by side with the fragment of sarcomatous tissue in the culture, the muscle tissue is invaded by the destroying and infiltrating sarcoma cells, which grow and multiply within the muscle fragment. After a few passages the muscle tissue is practically destroyed and a new piece must be added. It is possible to get several pieces of normal muscles contaminated by sarcoma cells at one time, after which they can be separated and cultivated in individual cultures and again contaminate other muscle fragments.

**Coal Tar Cancer Production.**—Results noted by Itchikawa and Baum show that contrary to the general belief the rabbit is the best animal for the experimental production of carcinoma by means of coal-tar. They have obtained the "first stage of cancer" in thirty-five days and "fully developed cancer" in forty-seven days.

**Experimental Production of Malignant Growths by Chemicals.**—Narat found that repeated applications of hydrochloric acid or caustic potash to the skin of mice over prolonged periods resulted in production of papillomatous and ulcerative lesions. The tumors seemed to be of inflammatory character and possibly presented precancerous alterations in epithelium. In some strains applications elicited formation of tumors which presented morphologically as well as biologically the characteristics of a cancer. Some strains of mice were refractory to experimental production of cancer, disregarding whether tar, caustic potash or hydrochloric acid was used.

**Metabolism of Cancer Cells.**—The hypothesis of tumor formation advanced by Warburg substitutes for the general and indefinite conception "irritation," the definite conception "oxygen-deficiency." According to it, tumors originate from the differentiated growing cells which are an integral part of every living tissue. In so far as oxygen deficiency results in the death of all cells which do not glycolyze, it does increase the glycolytic activity of the tissue, considered as a whole; but it does not increase the glycolytic activity of the individual cells which remain.

## Journal of Infectious Diseases, Chicago

36: 425-500 (May) 1925

*Chronic Infection with B. Welchii. B. S. Cornell, Toronto.—p. 425.
*Bacillus Gonidiaformans. R. Tunnicliff and L. Jackson, Chicago.—p. 430.
Capsulated Bacteria: B. Typhosus. M. L. Cooper, Chicago.—p. 439.
*Etiology of Acute Rheumatic Fever. B. J. Clawson, Minneapolis.—p. 444.
Growth of B. Botulinus in Thirty Per Cent. Peptone. XXVII. Van Slyke's Amino-Nitrogen Method for Study of Bacterial Metabolism. P. Bristol, San Francisco.—p. 457.
Thermal Death Time of Spores of Clostridium Botulinum. IV. Resistance of Spores to Heat and Dormancy or Delayed Germination of Spores Which Have Been Subjected to Heat. E. C. Dickson, G. S. Burke, D. Beck and J. Johnston, San Francisco.—p. 472.
Production of Mycelium by Oidium Albicans. A. A. Draper, Cincinnati.—p. 484.
Examination of Spoiled Canned Foods. J. R. Esty and A. E. Stevenson, Washington, D. C.

**Welch Bacillus Infection.**—A chronic infection with *B. welchii* has been produced by Cornell in rabbits, with mild anemia, loss of weight, convulsions and diarrhea as symptoms.

**Bacillus Gonidiaformans.**—A small, gram-negative, pleomorphic, anaerobic organism was isolated by Tunnicliff and Jackson from a tonsillar granule. During the course of its development it appears as bacilli, large and small coccoid forms and straight and wavy filaments. None of these forms are motile. The organism multiples by fission, budding and by the production of gonidangia and gonidia. The different forms contain chromatin material arranged in a great variety of shapes.

**Etiology of Acute Rheumatic Fever.**—The organisms described by Clawson were isolated in twenty cases of well defined, acute rheumatic fever, rheumatic endocarditis or chorea. All of the twenty strains were isolated from the blood before death except seven. Two of the seven were isolated from rheumatic joints before death, two from the pericardial exudates at necropsy, one from the pericardial exudate and spleen at necropsy, and two from the blood at necropsy. This streptococcus generally belongs to the viridans group. It does not seem to be a specific strain. Lesions similar to those occurring in human rheumatic lesions can be produced experimentally in animals by injecting these organisms. When these facts are considered, there seems to be ground for the belief that rheumatic fever with its associated lesions is produced by streptococci. There is a strong suggestion that rheumatic endocarditis and subacute bacterial endocarditis may be produced by the same agent and are but different degrees of the same process.

## Occupational Therapy and Rehabilitation, Baltimore

4: 83-170 (April) 1925

Development of Occupational Therapy in Private Hospitals for Mental and Nervous Diseases. E. D. Bond, Philadelphia.—p. 83.
Work for Crippled and Disabled Persons. S. Sullivan.—p. 101.
Value of Occupational Therapy with General and Orthopedic Cases. B. W. Carr, Washington, D. C.—p. 111.
Occupational Therapy in China. E. Stedman.—p. 119.
Weaving Frame for Bedside Occupational Therapy. L. J. Haas, White Plains, N. Y.—p. 135.
Occupational Therapy as Carried on at Oteen Hospital. J. E. Miller, Oteen, N. C.—p. 145.
Block Printing. E. J. Winn, Baltimore.—p. 153.
Bird Study in Occupational Therapy. A. E. Perkins, Helmuth, New York.—p. 159.

## Philippine Islands Medical Association Journal, Manila

5: 75-106 (March) 1925

*Appendicitis Among Filipinos. C. Reyes.—p. 75.
*Results of Blood Cultures During Recent Typhoid Investigation in Manila. G. R. Lacy and O. Garcia, Manila.—p. 85.
Carcinoma of Breast in Philippines. J. Abuel.—p. 85.
Early Diagnosis and Treatment of Acidosis. J. P. Celis, Manila.—p. 87.

5: 107-136 (April) 1925

Errors of Diagnosis in Gynecology. F. Calderon, Manila.—p. 107.
Epidemic Encephalitis. A. B. M. Sison, Manila.—p. 110.
Twelve Cases of Lethargic Encephalitis. M. Quisumbing, San Pablo, Laguna.—p. 114.

**Appendicitis Among Filipinos.**—There has been a steady increase of admissions of appendicitis in various stages in the surgical wards of the Philippine General Hospital for the last few years. Reyes has reviewed 1,135 cases and comes to the conclusion that there is both an apparent and an actual increase of appendicitis among Filipinos. The majority of patients belong to the student and the clerical classes, probably because of their adaptation to more modern, not necessarily always beneficial, habits of living and of eating, on account of the nature of their occupations. Intestinal para-

sites, notably *Trichuris* and *Ascaris*, appear to act strongly as predisposing factors, to say the least, in more than one-third of the cases of appendicitis. Constipation does not appear to be a marked feature in appendicitis among Filipinos, if it occurs at all.

**Blood Cultures in Typhoid.**—Lacy and Garcia obtained positive blood cultures from 30.7 per cent. of all cases examined, or from 40.2 per cent of those proved to be typhoid or paratyphoid. These positive results were obtained from patients who had been sick for an average of thirteen and one-tenth days. Nineteen paratyphoid "A" cultures were found among 120 positive cultures.

## West Virginia Medical Journal, Huntington

**20:** 225-280 (May) 1925

Septicemia. B. I. Golden, Elkins.—p. 230.
Clinical Therapy of Gentian Violet and Mercurochrome-220 Soluble Used Intravenously. C. H. Hall, Elkins.—p. 234.
Three Common Infections of Mouth. L. J. Parmesano, Elkins.—p. 241.
Septic Pericarditis — Acute in Case of Severe Secondary Anemia of Streptococcus Hemolyticus Origin. C. H. Hall, Elkins.—p. 245.
Intravenous Therapy of Mercurochrome. W. S. Smith, Philipi.—p. 248.
Blood Pressure in Relation to Anesthesia. W. W. Babcock, Philadelphia. —p. 251.
Golden Age of Medicine. O. B. Beer, Buckhannon.—p. 255.

## Wisconsin Medical Journal, Milwaukee

**23:** 645-690 (May) 1925

Treatment of Septicemias and Intoxications in Infants and Children. A. Brown, Toronto.—p. 645.
Chronic Cervicitis and Endocervicitis. C. H. Davis, Milwaukee.—p. 652.
Modern Aids to Labor. W. B. Hendry, Toronto.—p. 655.
Standardization in Digitalis Medication. E. F. Bickel, Oshkosh.—p. 659.

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## FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

## National Medical Journal of China, Shanghai

**11:** 65-150 (April) 1925

Pellagra in China. C. U. Lee.—p. 65.
Splenomegaly. J. T. Tai.—p. 75.
*New Method of Testing Coagulation Time. K. Yau.—p. 85.

**Testing Blood Coagulation Time.**—Two capillary tubes about 2 to 3 inches each are needed to make use of Yau's method. Tube A should have a diameter of from 1.2 to 1.5 mm., and tube B from 0.8 to 1.0 mm. The patient's ear lobe or finger tip is punctured, as usual. Then in an inclined position the blood drip is touched with tube A and the blood allowed to flow into it to about 2 or 2½ inches. At each 30 seconds, tube A is touched with B. Should there be no coagulation, the blood will flow very easily from A to B. After each touch, the end of tube B should be broken off so as to get ready for the next touch. When the coagulation has been well formed in A, the blood will not enter B, even by trying to push the latter into the former. The coagulation time is thus estimated by taking the time between the moment the blood first enters A and the moment it stops entering B.

## Quarterly Journal of Medicine, Oxford

**18:** 241-334 (April) 1925

*Blood Urea in Diabetes Mellitus. C. E. Brunton.—p. 241.
*Lymphoblastic Erythrodermia. J. H. Sequeira and P. N. Panton.—p. 250.
*Changes in Blood in Anesthesia. D. G. E. Potter.—p. 261.
*Tolerance of Body for Urea in Health and Disease. H. E. Archer and G. D. Robb.—p. 274.
Calcium and Magnesium in Some Pathologic Serums. E. Watchorn.—p. 288.
*Relation of Infection to Diabetic Coma. G. Graham.—p. 294.
*Spinal Fluid Sugar in Encephalitis. J. L. Halliday.—p. 300.
Pituitary Obesity in Adolescence. H. Gardiner-Hill, I. Jones and J. F. Smith.—p. 309.
*Carbohydrate Tolerance in Myxedema. H. Gardiner-Hill, P. C. Brett and J. F. Smith.—p. 327.

**Blood Urea in Diabetes.**—Twort and Archer's method for the estimation of blood urea has been investigated by Brunton and found to be very satisfactory. No relation exists between the amounts of blood sugar and of blood urea in patients suffering from diabetes mellitus. The administration of insulin has not been proved to alter the concentration of blood urea. The duration of diabetes mellitus does not necessarily increase the concentration of blood urea. Diabetic coma is not necessarily accompanied by an abnormal blood urea concentration.

**Lymphoblastic Erythrodermia.**—The clinical features and blood picture presented by the five cases reported by Sequeira and Panton were characteristic. The most prominent physical sign in all cases was the generalized redness of the skin. Glandular enlargement was present in all, but never formed the marked feature usual in chronic lymphatic leukemia. The course of the disorder is very chronic, extending over a number of years and is unaffected by treatment. The skin condition is associated with a blood picture of peculiar type. Some degree of anemia is usually present and may be fairly severe. The anemia is of the secondary type, but the color index may, on occasion, be high. The characteristic changes are found in the white cells, and consist in an increase, relative and absolute of the lymphocytes, the type of lymphocyte involved being mainly the small lymphocyte. The total number of leukocytes varies from 8,000 to nearly 60,000, and of these numbers the small lymphocytes may form as much as 80 per cent. In the latest stages the blood picture approaches, but does not reach, that of leukemia.

**Changes in Blood in Anesthesia.**—Although no relationship could be made out, it is suggested by Potter that the increase in blood phosphate that occurs in anesthesia may be due to the passage from the muscles to the blood of a hextose phosphoric acid compound. This has some small share in the lowering of the alkaline reserve, and accounts for the loss of phosphorus which other observers have found to occur in the muscle of anesthetized animals, and which is stored by the liver until the kidney is capable of excreting the accumulated waste products. The kidney needs phosphate in order that it may excrete the excess of acid accumulated in the body while its excretory capacity was diminished by the anesthesia, so that the excess of phosphorus found in the liver may have been mobilized to assist in the excretion of acid.

**Tolerance for Urea.**—According to Archer and Robb the test for tolerance of the body for urea is superfluous in gravely deficient cases. In the more doubtful cases it showed deficiency in eleven out of twelve cases, which had some definite renal interference. The twelfth case seemed, by all other signs, symptoms and tests, to have cleared up completely. The concentration test revealed deficiency in two only of these cases and, perhaps, in a third. The resting level of blood urea was normal in every case. Therefore, there seems definite reason to suppose that the tolerance test is more reliable than either of the other two tests. It detects renal deficiency, which is missed by the concentration test and the single estimation of blood urea. The chief disadvantage of the test is the rather long period over which specimens must be collected.

**Relation of Infection to Diabetic Coma.**—In each of the seven cases of coma described by Graham an infection was present and was probably responsible for sending the patients into coma. Most of them had had diabetes for some years, and their condition, so far as could be ascertained, had never been serious. Five patients became comatose before there were any signs of the infection, but in two the infection was easily recognized, for it involved the parotid gland in one case and the knee-joint in the other. Graham concludes that a general or local bacterial infection is often the direct cause of the onset of coma in a patient who has diabetes mellitus. In the presence of such an infection insulin is much less effective in lowering the blood sugar.

**Spinal Fluid Sugar in Encephalitis.**—Researches made by Halliday show that in epidemic encephalitis the fasting level of the sugar of the blood and the spinal fluid is within normal limits. The blood sugar curves are normal in some cases; in others, they indicate a delay in liver storage. These curves are in no way diagnostic, as similar curves are found in other conditions.

**Carbohydrate Tolerance in Myxedema.**—The authors failed to find the carbohydrate tolerance test as efficient a method of controlling the treatment of myxedematous patients as is the determination of the basal metabolic rate.

## Archives des Maladies de l'App. Digestif, Paris

15: 201-304 (March) 1925

*Cyst in Liver Simulating Gallstones. M. R. Castex et al.—p. 201.
Simple Ulcer of Small Intestine. Oudard and G. Jean.—p. 208.
Form Versus Functioning of Digestive Organs. L. Timbal.—p. 229.
Chemical Changes in Gastric Secretion. E. Liberopulo.—p. 238.

**Echinococcosis of Liver Simulating Gallstones.**—Castex, Romano and Beretervide observed the case in a woman, aged 38. The affection, which had started ten years before, presented attacks of jaundice, and severe paroxysmal pains, especially in the region of the gallbladder. This, as well as the blood, urine and other findings, suggested gallstones, apparently confirmed by the radiograms. An operation revealed a calcified cyst low in the liver, near but not connected with the gallbladder. The jaundice is explained by a probable toxic hepatitis provoked by the cyst.

## Schweizerische medizinische Wochenschrift, Basel

55: 357-380 (April 23) 1925

*Congo Red Test of Stomach Content. H. Ryser.—p. 357.
Traumatic Arterial Spasm and Thrombosis of Subclavian Vein. O. Winterstein.—p. 360.
Import of Shape of Bacilli in Tuberculous Sputum. T. and J. Stephani. —p. 365.
Psychic Condition in Tuberculosis. J. Kollarits.—p. 366.

**Congo Red Paper Test for Concentration of Hydrogen Ions in Stomach Content.**—Ryser uses blotting paper saturated with a solution of 1 gm. of Congo red in 500 c.c. of water, mixed with 200 c.c. of alcohol, and dried, as an indicator for the actual acidity of the gastric juice. In cases of hyperacidity the Congo red paper turns an intense light blue, in normal acidity the tint becomes blue with a violet tinge. A dirty red appears with hypo-acidity; with slight or no hydrogen ions there is no change in tint.

## Policlinico, Rome

32: 117-160 (March 1) 1925. Medical Section

*Diplococcus Pneumonia in Course of Plague. E. Di Mattei.—p. 117.
*Joint Complications of Typhoid. A. C. Ferrari.—p. 132.
Experimental Septic Endocarditis and Myocarditis. F. Guccione.—p. 144.

**Diplococcus Pneumonia in Course of Plague.**—The daughter, mother and father all developed the pneumonia in the course of fifteen days although they all resided in different streets. Both the Fränkel and the plague bacillus were cultivated from the heart blood, but plague bacilli were not found in the lungs at any time. Di Mattei interprets this group of cases as a fatal diplococcus pneumonia in persons already infected with plague.

**Joint Complications in Typhoid.**—Ferrari concludes from the case reported, in a girl of 12, that typhoid arthritis gravely compromises the functioning of the joints affected. No benefit was apparent from vaccine treatment. Intense pain, sometimes coming on suddenly, is the main symptom. Immobilization and traction should be applied early, to prevent dislocation. The roentgen findings are not characteristic.

32: 173-220 (April 15) 1925. Surgical Section

*Sgambati Urine Test. A. Merlini.—p. 173.
*Irradiation Treatment of Tuberculous Epididymitis. Nuvoli.—p. 180.
Fibrous Osteitis with Trophic Ulcer. A. Violato.—p. 191.
The Duodenal Tube. A. Trossarelli.—p. 210.

**The Sgambati Test for Indican in the Urine.**—Merlini confirms the reliability of the blue ring that forms at the zone of contact, when 2-3 c.c. of nitric acid is poured along the wall of the test tube, as a sign of the presence of indican. The acid has both a splitting and an oxidizing action.

**The Secondary Rays in Treatment of Tuberculous Epididymitis.**—Nuvoli lauds the fine results obtained with iontophoresis plus irradiation, thus utilizing the secondary rays of the heavy metals in a specific biologic action. He here analyzes eleven cases of tuberculous epididymitis all completely cured with this treatment. The primary rays alone have never displayed an antibacterial action in his experience, while the secondary rays have always proved potent in this line. The best results were obtained with mercury.

## A. M. M., Mexico City

4: 721-775 (March) 1925

*Typhus and Smallpox in Mexico City. E. Landa.—p. 723.
Cooperation of Roentgenologist and Surgeon as Illustrated by a Case of Sarcoma. U. Valdés.—p. 743.

**Typhoid, Typhus and Smallpox in Mexico City.**—Landa comments on the low mortality from typhus in the federal district, 49 deaths in a total of 664 recorded cases in 1923. This suggests that tabardillo is in a decadent phase. There were 99 deaths from typhoid in the 140 cases, and 425 in the 1,174 cases of smallpox.

## Archivos Españoles de Pediatría, Madrid

9: 129-192 (March) 1925

*Syphilitic Meningitis in Children. Dámaso Rodrigo.—p. 129. Begun, p. 65.
Pure Aortic Stenosis in Child Free from Rheumatism. L. Calandre and C. Sainz de los Terreros.—p. 156.
Transposition of Heart and Viscera. R. Giménez Guinea.—p. 163.

**Syphilitic Meningitis in Children.** — Dámaso Rodrigo describes four cases of acute meningitis in children of parents with a history of syphilis, and a fifth case in which the acute meningitis was evidently a manifestation of syphilis in the third generation, having skipped the parent. In his total fourteen cases, a complete cure was realized in 7.14 per cent.; 64.29 per cent. died. The meningitis may recur even after years of apparent cure. The colloidal gold and benzoin tests of the cerebrospinal fluid may throw light on the ultimate outcome in apparent recovery. One of his patients has apparently completely recovered. An early diagnosis is the only hope. Ice and revulsion are of no use, but moist packs to reduce the temperature may aid, with other symptomatic measures. Leredde ascribes to meningitis about 75 per cent. of the average 1,180 deaths of syphilitic children under 5 at Paris each year. A familial tendency is manifest. The shifting clinical picture may resemble that of meningism, or of serous or tuberculous meningitis, but changes in character are almost constant. Convulsions are more frequent the younger the child.

## Archivos Lat.-Amer. de Pediatría, Buenos Aires

18: 531-604, 1924

*Lead Polyneuritis. Cora Mayers.—p. 557.
Treatment of Cerebrospinal Meningitis. L. Morquio.—p. 559.
Origin and Correction of Eunuchoid Voice. Regules.—p. 560.
Case of Hydrophobia in Child. Petrillo.—p. 568.
Pneumococcus Parotitis in Girl of Five. Jaureguy.—p. 571.
Scarlet Fever in a Nursling. R. Cibils Aguirre.—p. 574.
Stillbirths in Relation to Syphilis in Brazil. Moncorvo, Jr.—p. 577.

**Lead Polyneuritis.**—The boy, aged 4, presented symptoms suggesting both chronic anterior poliomyelitis and progressive atrophy of muscles, but investigation revealed that he was in the habit of eating the tin foil in which chocolate candy was wrapped. One of his toys also had a lead mouthpiece. Rapid recovery followed.

## Archivos de Medicina de Pernambuco, Brazil

1: 1-42 (Jan.) 1925

Clinical Study of Anthrax. J. de Mendonça.—p. 3.
*Cannabis Indica and Occultism. R. Azedo.—p. 10.

**Cannabis Indica and Occultism.**—Azedo presents evidence seeking to explain certain occult phenomena as hallucinations induced by the burning of a toxic incense, supplemented by the fakir's suggestion. Cannabis is cultivated considerably in northern Brazil. It is known as the *planta de felicidade*, and is cultivated, with a strange ritual, solely for smoking.

## Semana Médica, Buenos Aires

1: 673-728 (March 26) 1925

*Splenectomy in Banti's Disease. M. Acuña and Correas.—p. 673.
*Stomach Function Test. T. Martini and J. Comas.—p. 677.
Meningitis in Course of Pulmonary Tuberculosis. G. Sayago.—p. 682.
*Perforated Gastric Ulcer. A. J. Pavlovsky.—p. 687.
Massage in Treatment of Sprain. O. C. Fernández.—p. 709.
Abscess Following Thoracentesis. J. R. Goyena.—p. 716.
*Ocular Complications of Intraspinal Anesthesia. H. Rebay.—p. 718.

**Splenectomy in Banti's Disease.**—Acuña and Correas relate that after the removal of the spleen in the boy, aged 6, all the symptoms of the grave Banti's disease for two years retrogressed. Immediately after the splenectomy the nucle-

ated erythrocytes increased from about 200-500 to 30,000 and 35,000, and kept at nearly this figure during the following year. Then in the midst of good health the child succumbed to an acute intercurrent meningitis. The intense erythroblast reaction seems to indicate that the spleen in the normal subject checks bone marrow functioning.

**Test of Stomach Function.**—Martini and Comas combine the Rehfuss fractioned examination of stomach contents, the tube left in the stomach two hours, with the Winther method of estimating the molecular concentration of the aspirated fluid. They say that a year's experience with this combined technic has confirmed its superiority over all other methods for testing conditions in regard to secretion and motility. No pathognomonic curves were discovered.

**Perforation of Gastric or Duodenal Ulcer.**—In one of the thirty-nine cases analyzed by Pavlovsky, there had never been any symptoms from the ulcer; the perforation came like a bolt from a clear sky. In seven cases the diagnosis had been acute appendicitis; this entailed loss of precious time wasted on the appendix before the true cause of the disturbances was discovered. With perforation of a gastric ulcer, the axillary and rectal temperature are practically the same; there is tenderness in the epigastrium; no Rovsing sign nor displacement of the umbilicus to the right (Chutro sign of appendicitis); no resonance in Traube's space; the area of dulness over the liver is masked by tympanic resonance (Jaubert sign); the contraction of the abdominal wall is more pronounced in the upper region, and there is relative bradycardia—all these features differing from those with appendicitis. He tabulates the details of his cases.

**Ocular Complications of Intraspinal Anesthesia.**—Rebay ascribes to hypertension from a toxic serous meningitis the choked disk and paralysis of ocular muscles sometimes observed with intraspinal anesthesia. Lumbar puncture relieves the pressure. The ocular symptoms harmlessly subsided in the three cases described.

## Archiv für Kinderheilkunde, Stuttgart

**76:** 1-80 (April 30) 1925

Blood Count in Healthy Infants. Hofmann and Welcker.—p. 1.
*Goiter in Infants. A. Eckstein.—p. 7.
*Cerebrospinal Fluid in Syphilitic Children. v. Gutfeld and Meyer.—p. 13.
*Infants in an Asylum. M. Zwingenberger.—p. 27.
Tuberculosis and Crowded Living Conditions. I. Sickinger.—p. 40. Cont'd.
*Vaccine Treatment of Pyelocystitis. H. Grunow.—p. 45.
Capillaries in Hemorrhagic Conditions. v. Bernuth.—p. 54.
Present Status of Hirschsprung's Disease. Siller.—p. 63.

**Treatment of Goiter in Infants.**—Wieland does not confirm the relative resistance of infants to iodin. He and Hamburger urge caution in dosage and duration of iodin treatment. Eckstein usually observed dyspeptic stools and failure to gain on the application of iodin ointment. As soon as the reduced goiter ceases to menace suffocation, he discontinues the iodin treatment. He recommends treatment of goiter in infants by small doses of iodin, in spite of possible iodin injury, as sure and rapid reduction of large goiters follows, and no other practical treatment is at present available. It requires regular oversight by the physician.

**Cerebrospinal Fluid in Syphilitic Children.**—Systematic examination of the blood and cerebrospinal fluid in 155 syphilitic children showed a Wassermann reaction parallel to the clinical findings in only part of the cases. In cases of mental and nervous disturbance, Gutfeld found a positive reaction in the cerebrospinal fluid more often than a negative, but the reaction may be positive without such disturbances, or vice versa. Positive blood tests usually correspond to a positive reaction in the cerebrospinal fluid; the reverse does not hold. The colloidal gold test in the fluid elicited a reaction parallel to the Wassermann test in almost every case. Endolumbar treatment was never used. The clinical findings alone afford definite indications for treatment.

**Fate of Infants in Foundlings' Asylum and After Discharge.**—Zwingenberger attributes the high infant mortality in the St. Augustin asylum to unfavorable hygienic conditions from overcrowding, but the death rate is also high among the discharged infants. The situation indicates that control of illegitimate children is essential for effectual welfare work for infants. She regards this total mortality of 40.55 per cent. in the first year of life as a revelation of the inadequate care of the illegitimate child.

**Vaccine Treatment of Pyelocystitis in Infants and Children.**—Grunow says that comparison of the results of the various methods of treatment of pyelocystitis confirms the value of vaccine therapy. With it the outlook seems far more encouraging for the cure of this persistent and protracted affection.

## Beiträge zur klinischen Chirurgie, Berlin

**133:** 1-204 (Jan.) 1925

*Chordoma. H. Coenen.—p. 1.
Tardy Rupture of Tendon with Fracture of Radius. Axhausen.—p. 78.
Origin of Loose Bodies in Joints. G. Axhausen.—p. 89.
*Atypical Hyperthyroidism. F. Kaspar and L. Sussig.—p. 120.
*Periarterial Sympathectomy. A. Schmidt.—p. 131.
*Osteomyelitis and Trauma. A. Schmidt.—p. 144.
*Osteomyelitis of the Jaw in Infants. H. Bronner.—p. 163.
Contusion of Duodenum. A. v. Tempsky.—p. 184.

**Chordoma.**—Coenen epitomizes what is known in regard to chordomas, saying that sixty-eight cases have now been published in detail but none have been diagnosed during life. Both the benign and malignant chordomas arise from aberrant cells from both the primitive notochord and the skeleton-producing tissue around it. No sharp distinction between the malignant and nonmalignant types is evident for a long time.

**Atypical Hyperthyroidism.**—Kaspar and Sussig describe a case of pseudohyperthyroidism, the symptoms those apparently of extremely exaggerated thyroid function, lacking only the exophthalmos and the vascularization of the thyroid for the clinical picture of exophthalmic goiter. The hyperthyroid symptoms had been preceded and accompanied by pains in the right leg, ascribed to rheumatism. Removal of the goiter of long standing produced no effect on the hyperthyroid symptoms except to aggravate them and the nervous disturbances. The woman of 53 was emaciated, her weight 36 kg. Then a tumor in the center of the sciatic nerve—a complaint the woman had scrupulously concealed before—was discovered and removed. The hyperthyroid symptoms subsided at once; the patient has been in good health and placid during the eighteen months since, and has gained 30 kg. Another puzzling feature of the case had been the high temperature, persisting for months, attributed to absorption of the neuroblastoma products; protracted fever does not fit into the exophthalmic goiter picture.

**Periarterial Sympathectomy.**—Schmidt's research on dogs demonstrated regeneration of the sympathetic network in seven or eight months after absolute decortication of a segment of the artery. He further confirmed that the mixed nerves pass to the different segments of the artery; the nerves of the vessel do not run along it lengthwise.

**Osteomyelitis and Trauma.**—Schmidt advises to analyze the trauma and its consequences, fitting them in the frame of the course of the osteomyelitis, when trying to discover a connection between them. Whether the trauma carried germs into the tissues, whether it activated germs lying hitherto harmlessly latent in the bone marrow or elsewhere, or released bacteria are questions to be discussed, as also whether the accident was an exciting cause or injured the bone marrow enough to annul its bactericidal powers, or whether the bodily resistance had been undermined by some other factors before the trauma occurred.

**Osteomyelitis of the Jaw in Infants.**—In connection with a personally observed case, Bronner describes thirty-nine from the records. The lesion was in the upper jaw in all but 10 per cent. The symptoms on the part of the eye first attracted attention, the swelling of the upper and lower lids, most pronounced at the internal angle. The pus does not perforate into the nose when it comes from the jaw, instead of from the maxillary sinus. The accumulation and retention of pus may persist obstinately for months. Some small injury of the mouth; secondary infection; infection of the dental germ, and osteomyelitic disease of the jaw, form the links of the chain. The process occurs in the anterior portion of the alveoli; the act of suckling evidently helps at least in localization of the lesion.

## Wiener klinische Wochenschrift, Vienna

**38:** 475-498 (April 30) 1925

Influence of Tumors on Sex Characters. J. Halban.—p. 475.
Ulcer Carcinoma in Roentgenology. G. Schwarz.—p. 478.
*Bacteriophage in Different Concentrations. W. Gohs.—p. 481.
Cystadenoma of Trachea. K. Staunig.—p. 483.
Tardy Hemorrhage in Childbirth. J. Sahler.—p. 484.
Surgery for Irradiated Inflammatory Area. F. Pordes.—p. 487.
Sign of Paralysis of Inferior Laryngeal Nerve. F. G. Stockert.—p. 487.
Roentgen Ray Treatment in Dermatoses. K. Ullmann.—p. 488.

**Action of Bacteriophage in Different Cencentrations.**—Gohs experimented with a bacteriophage, preserved for a year, obtained from dysentery bacilli. A fifty thousandth, to one ten millionth part of a drop induced complete lysis in a Shiga bacillus culture; while with one ten thousandth part of a drop, to five drops, of the bacteriophage, a large part of the bacilli still remained alive. Gohs' explanation is that the action of the bacteriophage consists in a process of fermentation. A large amount of the bacteriophage entails such an excess of the split products of the bacteria, that lysis is thus inhibited.

## Zeitschrift für Geb. und Gynäkologie, Stuttgart

**88:** 495-717 (April 21) 1925

*Transplantation of Irradiated Ovaries. A. Biedl et al.—p. 495.
Extra-Uterine Pregnancy. F. Stamm.—p. 553.
Inflammatory or Neoplastic Tumor in Female Urethra? H. R. Schmidt.—p. 563.
*Frank's Subcutaneous Symphyseotomy. F. Klee.—p. 574.
*Direct Blood Transfusion. P. Schumacher.—p. 591.
Case of Lithopedion. Krauss.—p. 608.
*Jaundice of the New-Born. A. Greil.—p. 628.
*Hemogram in Gynecology. K. Sommer.—p. 658.
*Arrest of Uterine Hemorrhage. M. Henkel.—p. 678.
Structure and Significance of Myoma Capsule. L. Fraenkel.—p. 690.

**Transplantation of Ovaries Treated with Roentgen Ray.**—Biedl, Peters and Hofstätter report that the graft in mature rabbits one to four days after fertilization or later does not affect the gestation. Abortion always results on removal of the own ovaries at the time of the transplanting or within seven days after fertilization. The transplanted interstitial cells alone thus are unable to protect nidation. Transplants of irradiated ovaries in irradiated animals are doomed to sure and rapid destruction. No effect of the transplantation could be established.

**Subcutaneous Symphyseotomy According to Frank.**—Klee says that with no progress after hours of hard labor, after this intervention delivery often occurs spontaneously in fifteen to twenty minutes. If the head is firmly impacted, so that extraction even by cesarean section or high forceps is difficult, with no prospect of spontaneous overcoming of the obstacle, symphyseotomy cannot be surpassed. The danger of thrombus formation after symphyseotomy may perhaps be lessened by avoiding injury to the corpora cavernosa.

**Observations in Women After Transfusion by Oehlecker's Method.**—Schumacher states that neither the test infusion of 5 to 10 c.c. of the donor's blood as a biologic test before the transfusion proper, nor the negative outcome of agglutination or hemolysis tests affords certain indications that grave injury may not result from direct transfusion. Agglutination tests should, however, as far as possible be undertaken before transfusion. Two of his patients died from uremia as a consequence of injury of the kidney from the direct transfusion. In one case, examination after the transfusion showed strong agglutination of the donor's erythrocytes by the patient's serum. Marked hemoglobinuria developed with progressive jaundice and mild cyanosis—evident signs of hemolysis. A peculiar, retarded, deep respiration was noted. The pathologic anatomic picture revealed extraordinarily relaxed heart, hyperplasia of the spleen, and edema of the lungs. He cautions against blood transfusion if any renal impairment is demonstrable beforehand.

**Origin and Prevention of Icterus Neonatorum.**—This jaundice is neither purely hemolytic nor purely hepatogenic, Greil says, but a distinct entity with a peculiar combination of clinical and pathologic anatomic characteristics of both. The primary cause lies in deep systemic changes in the fetus. In jaundice in the new-born the polycythemia discloses excessive and rapid production of blood cells by the hematopoietic apparatus. The physiologic decrease of blood corpuscles is due not only to the sudden separation from the placental source of hemoglobin formation and the failure of the blood islands in the liver to thrive on chiefly venous blood and their rapid destruction, but also to the increased hemolysis. The chief factor in this postnatal reduction of blood cells is evidently the great increase in metabolism and functional activity, perhaps also a qualitative change in the work of the spleen. Greil recommends the administration of calcium ions. He considers daily intravenous injection of calcium salts, begun early, the most reliable weapon against all endogenous disturbances of metabolism in pregnancy. In cases of menacing cholemic intoxication in infants, splenectomy is strictly indicated as the only means of saving life.

**The Hemogram in Gynecology.**—Its chief value in septic general infection seems to Sommer to be in the differentiation of clinically equally grave pictures as grave and less grave. He describes six cases with unfavorable prognosis from the blood picture and fatal outcome in all. His investigations include 107 cases of septic general infection, with only fourteen recoveries. General infections from *Bacillus emphysematosus* occupy a special position. Physometra and sepsis from gangrene lead to great changes in the leukocyte picture, with destruction of the erythrocytes. The leukocyte count is very high with a strong increase of myelocytes (Heim).

**Arrest of Uterine Hemorrhage by Clamping the Parametrium.**—Henkel's procedure with two-pronged hooked forceps is applied in hemorrhage from inertia and in hemorrhage from tears in the cervix, to block the uterine arteries. The clamps must be applied high enough to hold the arteries securely and the tissues must be compressed without crushing. Experiments on cadavers showed this result to be attainable only with the pronged forceps. The lips of the os are clamped and the uterus drawn strongly downward so that the portio is before the vulva. In atonic conditions this alone partially checks the bleeding through the kinking of the arteries. To clamp a parametrium, the portio is drawn strongly to the other side; the anterior vaginal wall is held back and the forceps applied on the parametrium so that the prongs hold part of the uterine wall. The forceps when closed are pressed upward, and in the correct position lie diagonally. Before application the bladder must be emptied by catheter. If in placenta praevia cases it is difficult to determine whether the hemorrhage is from inertia or tears, or both, this method, he says, effects sure and safe arrest of the bleeding. He rejects the tampon because of the danger of infection. Release of pressure after an hour, with the forceps in position, affords a good test for removal of the forceps.

## Časopis lékařů českých, Prague

**64:** 681-720 (May 2) 1925

*Peculiar Form of Neurasthenia. A. Heveroch.—p. 681.
*Vesicorenal Reflux of Urine. J. Rejsek.—p. 686.
Hemorrhages of Ear. K. Výmola.—p. 697.
Legg-Perthes Disease. R. Ripa and V. Musil.—p. 701. Conc'n.
American Clinical Calorimetry. I. Mačela.—p. 708.
Polycythemia in Congenital Heart Disease. S. Vajda.—p. 710.

**Peculiar Form of Neurasthenia.**—Heveroch describes several cases of neurasthenia of sudden origin without previous exhaustion. Anxiety, sensations of flushes in the head, headache and paresthesias, and sexual deficiency seem to point to a disturbed circulation in the basal nuclei around the third ventricle.

**Vesicorenal Reflux of Urine.**—Rejsek reports his observations on the flow of urine from the bladder into the ureters. This insufficiency of the ureter may be due to malformation, paresis of the muscle or grave anatomic changes near the openings, such as tuberculosis or tumors. The danger of ascending infection is great.

## Svenska Läkaresällskapets Handlingar, Stockholm

**51:** 1-60 (March 31) 1925

Anaerobic Wound Bacteria in Relation to Normal Body Fluids and Cells. R. Bergman.—p. 1.
Cerebrospinal Fluid in Localization of Brain Tumors. E. Sahlgren.—p. 53.

# JOURNALS ABSTRACTED IN THE CURRENT MEDICAL LITERATURE DEPARTMENT, JANUARY-JUNE 1925

Abstracts of important articles in the following journals have been made in the Current Literature Department of THE JOURNAL during the past six months. Any of the journals, except those starred, will be lent by THE JOURNAL to subscribers in the United States and to Fellows of the American Medical Association for a period not exceeding three days. Two journals may be borrowed at a time. No foreign journals are available prior to 1920, nor domestic journals prior to 1923. Requests for periodicals should be addressed to the Library of the American Medical Association and six cents in stamps should be enclosed. This covers the average expense of mailing a journal. Thus most of these journals are accessible to the general practitioner, no matter where located.

*A. M. A. Asociación Médica Mexicana. M. 5 pesos. Mexico City.
Acta Chirurgica Scandinavica. Irregular. 20 kroner. Stockholm.
Acta Medica Scandinavica. Irregular. $5.50 per volume. Stockholm.
Acta Ophthalmologica. Irreg. $6 per volume. Copenhagen.
Acta Pædiatrica. Irregular. $5 per volume. Uppsala.
American Journal of Anatomy. Bi-m. $7.50 per volume. 36th St. and Woodland Ave., Philadelphia.
American Journal of Diseases of Children. M. $4. American Medical Association, 535 N. Dearborn St., Chicago.
American Journal of Electrotherapeutics and Radiology. M. $5. Mt. Royal and Guilford Aves., Baltimore.
American Journal of Hygiene. Bi-m. $6. Editor, Dr. Chas. E. Simon, 310-312 W. Monument St., Baltimore.
American Journal of the Medical Sciences. M. $6. Lea & Febiger, 600 Washington Square, Philadelphia.
American Journal of Obstetrics and Gynecology. M. $6. C. V. Mosby Co., St. Louis.
American Journal of Ophthalmology. M. $10. 7 W. Madison St., Chicago.
American Journal of Pathology. Bi-m. $5. Dr. F. B. Mallory, Boston City Hospital, Boston.
American Journal of Physiology. M. $5 per volume. Baltimore.
American Journal of Psychiatry. Q. $5 per volume. Johns Hopkins Press, Baltimore.
American Journal of Public Health. M. $5. 370 Seventh Ave., New York.
American Journal of Roentgenology and Radium Therapy. M. $10. Paul B. Hoeber, 67 E. 59th St., New York.
American Journal of Syphilis. Q. $8. C. V. Mosby Co., St. Louis.
American Journal of Tropical Medicine. Bi-m. $5 per volume. Williams & Wilkins Co., Mt. Royal and Guilford Aves., Baltimore.
American Review of Tuberculosis. M. $8 per volume. National Tuberculosis Association, 370 Seventh Ave., New York.
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Archiv für Klinische Chirurgie. Irregular. Price varies. Berlin.
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*Gazette Hebdomadaire des Sciences Médicales de Bordeaux. W. 30 francs. Bordeaux.
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Indian Medical Gazette. M. Rs. 18. Calcutta.
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# SUBJECT INDEX

This is an index to all the reading matter in THE JOURNAL. In the Current Medical Literature Department only the articles which have been abstracted are indexed.

The letters used to explain in which department the matter indexed appears are as follows: "E," Editorial; "C," Correspondence; "Ml," Medicolegal; "P," Propaganda for Reform; "ME," Medical Economics; "ab," abstract; the star (*) indicates an original article in THE JOURNAL.

This is a subject index and one should, therefore, look for the subject word, with the following exceptions: "Book Notices," "Deaths" and "Society Proceedings" are indexed under these titles at the end of the letters "B," "D" and "S." State board examinations are entered under the general heading State Board Reports, and not under the names of the individual states. Matter pertaining to the Association is indexed under "American Medical Association." The name of the author, in brackets, follows the subject entry.

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## SOCIETIES

*A.—Association*
*Acad.—Academy*
*Am.—American*
*Coll.—College*
*Conf.—Conference*
*Cong.—Congress*
*Conv.—Convention*
*Dist.—District*
*Hosp.—Hospital*
*Internat.—International*
*M.—Medical or Medicine*
*Nat.—National*
*Phar.—Pharmaceutical*
*Phys.—Physicians*
*Ry.—Railway*
*S.—Society*
*Surg.—Surgical or Surgeon, Surgery*

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